This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google™ books

https://books.google.com

WILS
GOVU
Y 4.M 59/2:Sci 2/pt.1-7

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

y4.M59 2:Sc1 2 pt.1

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARING

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 1

MARCH 30, 1943

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1943

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON SCIENTIFIC AND TECHNICAL MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HENRY H. COLLINS, Jr., and HERBERT SCHIMMEL, *Consultants*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

Statement of— Page

Hon. Thurman Arnold, Judge of the United States Court of Appeals, former Assistant Attorney General of the United States in Charge of the Antitrust Division 8

SCHEDULE OF EXHIBITS

No.	Exhibit	Appears on page
1	S. 702, 78th Cong., 1st sess., a bill to mobilize the scientific and technical resources of the Nation	1
2	Statement of John W. Walker before the Senate Committee on Patents regarding the activities of General Electric Co. and Westinghouse Electric & Manufacturing Co. with respect to the development of the fluorescent lighting industry, submitted by Hon. Thurman Arnold	28
3	Statement of Hon. Thurman Arnold regarding the Standard Oil Co. and the development of synthetic rubber	47
4	Statement of Walter R. Hutchinson, special assistant to the Attorney General, before the Senate Committee on Patents, Apr. 20, 1942, submitted by Hon. Thurman Arnold	49
5	A National Policy for Industry, pamphlet signed by a number of British businessmen, submitted by Hon. Thurman Arnold	80
6	Statement of Hon. Thurman Arnold before the Senate Committee on Patents, July 31, 1942	91

AUG 22 '44 U OF M BINDERY

1068959

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

TUESDAY, MARCH 30, 1943

UNITED STATES SENATE,
SUBCOMMITTEE ON SCIENTIFIC AND TECHNICAL
MOBILIZATION OF THE COMMITTEE ON MILITARY AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 2:30 p. m., in room 104–B, Senate Office Building, Senator Harley M. Kilgore (chairman) presiding.

Present: Senators Kilgore (chairman) and Wallgren.

Also present: Henry H. Collins, Jr., and Herbert Schimmel, of the committee staff.

Witness present: Hon. Thurman Arnold; also present: Robert M. Hunter and Joseph Borkin.

Senator KILGORE. The committee will come to order.

This is the first meeting of the subcommittee on S. 702 of the Committee on Military Affairs. I want to introduce S. 702 at this point and have it made part of the record.

(S. 702 was marked "Exhibit No. 1" and follows:)

EXHIBIT No. 1

[S. 702, 78th Cong., 1st sess.]

A BILL To mobilize the scientific and technical resources of the Nation, to establish an Office of Scientific and Technical Mobilization, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

DECLARATION OF POLICY

SECTION 1. The Congress hereby recognizes that the full development and application of the Nation's scientific and technical resources are necessary for the effective prosecution of the war and for peacetime progress and prosperity, and that serious impediments thereto consist in—

the unassembled and uncoordinated state of information concerning existing scientific and technical resources;

the lack of an adequate appraisal, and the unplanned and improvident training, development, and use, of scientific and technical personnel, resources, and facilities in relation to the national need;

the consequent delay and ineffectiveness in meeting the urgent scientific and technical problems of the national defense and essential civilian needs;

the trend toward monopolized control of scientific and technical data and other resources with lack of access thereto in the public interest; and

the absence of an effective Federal organization to promote and coordinate, in the national interest, scientific and technical developments.

Digitized by Google

The purposes of this Act accordingly are—

(1) to appraise the current use of scientific and technical knowledge, facilities, and personnel, and to develop comprehensive national programs for the maximum use of science and technology in the national interest in periods of peace and war;

(2) to mobilize for the prosecution of the war all scientific and technical facilities and personnel;

(3) to facilitate after the war the transition of the national economy from the tasks of war to peacetime enterprise;

(4) to assemble, coordinate, and develop for use, in the public interest, all scientific and technical data and facilities; to facilitate access to scientific and technical information and literature and to aid and encourage the writing and publication thereof;

(5) to promote the full and speedy introduction of the most advanced and effective techniques—for the benefit of agriculture, manufacturing, distribution, transportation, communication, and other phases of productive activity; for economical and efficient Federal, State, and local government; and for the national defense and general welfare;

(6) to aid, encourage, and protect the research and enterprise of inventors, scientists, technicians, scientific and educational institutions, research laboratories and Government establishments engaged in scientific and technical work, and to make their resultant discoveries and data more readily available, and without discrimination, to all sections of industry, agriculture, and the public, in order to aid the war effort at the present time and in or order to promote full employment and higher standards of living after the war;

(7) to discover and develop substitutes for strategic and critical materials, and to promote the most beneficial use of agricultural, mineral, and other natural resources;

(8) to promote interest in scientific and technical education, and to provide for all qualified persons the means of scientific and technical training and employment;

(9) to provide guidance in scientific and technical matters to the President, the Congress, and all Federal, State, and local government agencies and establishments, and to contribute guidance and, in all proper cases, financial and other assistance to solution of the technical and scientific problems of industry, agriculture, and of any agency or establishment or individual inventor;

(10) to promote the maintenance and expansion of free enterprise by making available to smaller businesses the benefits of scientific advancement;

(11) to standardize, when in the public interest, scientific and technical designs, practices, and specifications; and

(12) to establish a national scientific and technical office to assure maximum cooperation and integration of the facilities and personnel of governmental and private agencies, institutions, and employers for the above purposes, and to coordinate the activity of these facilities and personnel, where necessary, in the national interest.

This Act may be cited as the "Science Mobilization Act."

DEFINITIONS

SEC. 2. As used in this Act—

(a) "Scientific and technical facilities" shall include real property and personal property, tangible and intangible, used or intended to be used for scientific or technical purposes, programs, research, projects, and developments and shall include further all methods, processes, procedures, techniques, designs, specifications, patents, inventions, and scientific or technical information or knowledge of every description used or intended to be used for scientific or technical purposes in research and development or in the production or supply of war or civilian goods or services.

(b) "Scientific and technical personnel" shall include all persons, excepting physicians and dentists, who have completed any course of study in any college or university in any branch of science or its practical application or who have had not less than an aggregate of six months' training or employment in any scientific or technical vocation.

(c) "Agency or establishment" shall mean any agency, board, department, office, bureau, or other body of the Federal or any State or local government,

Digitized by Google

or any person, firm, or partnership engaged in business for profit, or any corporation, profit or nonprofit, association, school, college, and university.

ESTABLISHMENT OF INDEPENDENT OFFICE

SEC. 3 (a) There is hereby created, as an independent agency of the Federal Government, the Office of Scientific and Technical Mobilization (hereinafter referred to as "the Office") which shall be administered by an Administrator to be appointed by the President, by and with the advice and consent of the Senate, and to serve at the pleasure of the President. The Administrator shall receive a salary at the rate of $12,000 a year. The Administrator shall appoint, fix the compensation, and define the authority and duties of such officers, employees, attorneys, and agents as he shall deem necessary to carry out the purposes and provisions of this Act and to transact the business of the Office. Such appointments shall be made in accordance with the provisions of the civil-service laws and regulations and the Classification Act of 1923, as amended: *Provided*, That when the Administrator determines it to be necessary in order to effectuate the purposes and provisions of this Act he may waive these requirements. The Office may make such reimbursement as it may deem necessary and proper for the traveling, subsistence, or other expenses incurred in the performance of official duties by its officers, employees, attorneys, agents, and by other persons or members of committees, boards, or other bodies designated by it to carry out such duties. The Office shall be located in or near the District of Columbia, but the Administrator may establish such branch offices outside the District of Columbia areas as may be required to carry out the purposes of the Act.

(b) Any person employed on a full-time basis by the Office shall receive no salary, wages, or other compensation from any source except the Office.

(c) There is hereby established within the Office a National Scientific and Technical Board (hereinafter referred to as the "Board") consisting of the Administrator, who shall be Chairman, and six other members, to be appointed by the President, and to include one representative each for industry, agriculture, labor, the consuming public, and two additional members at large who shall be scientists or technologists. Each such member shall receive compensation at the rate of $10,000 a year. The Board and its several members shall perform such duties under the direction and control of the Administrator as he may assign to them; they shall have access to all information of the Office relating to the administration thereof.

(d) There is hereby created a National Scientific and Technical Committee consisting of the Board, one representative each for each of such Federal departments as the President shall designate, four additional representatives of the consuming public, three additional scientists or technologists, and six additional members representing labor and six additional members representing management, including small business), in the major fields of production and service to be appointed by the President and to serve without compensation, to advise and consult with the Administrator, who shall be the Chairman thereof, upon the basic policies governing the administration of this Act. Such committee shall meet regularly, not less than once a month.

(e) There is hereby transferred to the Office the powers and personnel of the National Roster of Scientific and Specialized Personnel of the War Manpower Commission, together with its records, furniture, and equipment, and all its unexpended balances of appropriations or other funds available to carry out its powers and duties.

POWERS OF THE OFFICE

SEC. 4. To effectuate the purposes of this Act, the Office shall be vested with the following powers and duties which it shall exercise and perform under the direction and control of the Administrator:

(a) To take and keep a census of scientific and technical facilities, requirements, and personnel in the United States and its possessions and to provide archives for all scientific and technical material coming into the possession of the Government or any agency or department thereof.

(b) To formulate and promote projects and programs for the development and use of scientific and technical facilities and personnel and, when necessary, to initiate and carry out such projects.

(c) To foster and develop scientific and technical methods, to promote their application in the national welfare, either within the Office or by other auspices

Digitized by Google

public or private, and to promote and provide training and participation in science and in its application.

(d) To ascertain and assess scientific and technical developments in relation to, and to study their impact upon, the national welfare, or any particular category thereof.

(e) To solicit and to receive aid and support from any source for the advancement of scientific and technical methods.

(f) To coordinate the scientific and technical data, methods, and facilities of, or available to, all agencies and departments of the Federal Government.

(g) To foster international cooperation in scientific discovery and the application thereof; to acquire information with respect thereto from other countries and their nationals; to exchange scientific and technical personnel and information with such countries; and to engage in other suitable forms of international collaboration relating to science and technology.

(h) To make available, upon request, to the President, to the Congress, and to other persons or establishments (upon such conditions as the Administrator shall prescribe), technical guidance and assistance and any record or other data necessary therefor.

(i) To review specifications, standards, and designs of military and civilian products and services and their methods of production and supply and to recommend suitable simplifications and changes therein.

(j) To finance by loan, grant, exchange, purchase, or otherwise the operations or functions, or any of them, authorized by this Act, and, for the same purposes, to make or acquire any contract, guaranty, indemnity, stipulation, lease, or other instrument, to acquire, improve, and alter real and personal property, and to enter into any other transaction necessary or appropriate for the performance of its duties or powers.

(k) To acquire patents and patent rights, and to authorize the use thereof, subject to the provisions of section 7 of this Act, and to authorize the use or other disposition of any other property belonging to, or controlled by, the Office, upon such terms and conditions and for such compensation as the Administrator shall determine, which compensation shall be payable to the Office.

(l) To establish a system of merit awards to be granted to any agency, establishment, or person making any outstanding scientific or technical contribution to the national defense or the general welfare.

(m) To make, amend, and rescind appropriate rules and regulations to carry out the purposes of this Act and all the powers and duties vested in the Office, which rules and regulations shall have the force and effect of law.

(n) To avail the Office of the information, services, facilities, officers, and employees of any Federal establishment in carrying out the purposes and provisions of this Act.

(o) To conduct such research and investigation touching upon the use and development of scientific and technical facilities and personnel as the Office may deem necessary and appropriate to carry out the purposes of this Act.

MOBILIZATION OF PERSONNEL

SEC. 5. To mobilize scientific and technical manpower for the prosecution of the war and otherwise to carry out the purposes of this Act—

(a) Section 10 (a) of the Selective Training and Service Act of 1940, as amended, is further amended by adding at the end thereof the following:

"Any provision of this Act to the contrary notwithstanding—

"(1) whenever the Administrator of the Office of Scientific and Technical Mobilization deems it necessary, to carry out the purposes of the Science Mobilization Act, that occupational deferments be granted to persons engaged in any particular scientific or technical occupation or having or receiving any scientific or technical training, he shall certify to the Chairman of the War Manpower Commission that (1) such occupation or training is of a scientific or technical character, and (2) that it is critical in the war effort; and such Chairman shall thereupon approve or disapprove each such certification. In event of such approval, such Administrator shall thereafter determine, subject to such rules, quotas, schedules, and procedures as the Chairman of the War Manpower Commission may prescribe, the facts and circumstances pertinent to the occupational deferment of any person within the scope of such certification and whether any such deferment should be made;

"(2) any determination respecting occupational deferment made by the Administrator of the Office of Scientific and Technical Mobilization in accordance with

Digitized by Google

the authority of this section, as amended, shall be conclusive upon all civilian local boards and any other civilian agencies functioning under this Act."

(b) During the existence of a state of war and for six months thereafter, the Administrator is authorized to prescribe and promulgate appropriate rules, regulations, procedures, and methods, subject to direction by the Chairman of the War Manpower Commission, for the training, classification, and employment of all scientific and technical personnel by any person, agency, or establishment, public or private.

MOBILIZATION OF FACILITIES

SEC. 6. To mobilize scientific and technical facilities for the defense of the United States and otherwise to effectuate the purposes of this Act—

(a) (1) During the existence of a state of war, whenever the Administrator determines, subject to review by the President, that (1) the use of any scientific or technical facility, or of any license, easement, privilege, or other right therein, is needed for the defense of the United States or the prosecution of the war; (2) such need is immediate and impending and such as will not admit of delay or adequate fulfillment by resort to any other source of supply; and (3) all other means of obtaining the use of such facility or of any right therein, upon fair and reasonable terms, for the defense of the United States or the prosecution of the war have been exhausted, he is authorized to requisition such facility and any right therein and to dispose of the same in such manner, not inconsistent with this Act, as he may determine to be necessary for the defense of the United States or the prosecution of the war upon the payment of fair and just compensation for such property to be determined in the same manner as provided in Public Law Numbered 274, Seventy-seventh Congress, as amended, except that the Administrator, subject to review by the President, shall make all determinations in the first instance, respecting fair value of such facility and right: *Provided*, That the requisitioning power herein granted shall not extend to any patent itself but shall be confined to licenses or any other right therein respecting user, together with the right to grant sublicenses.

(2) Whenever the Administrator determines that such facility or any right therein requisitioned pursuant to subsection (1) of this section is no longer needed for the defense of the United States or the prosecution of the war, he shall return the same to the person from whom it was requisitioned if such person desires return of the property or facility, in the same manner as provided respecting returns of requisitioned property in sections 1 and 2 of Public Law Numbered 274, Seventy-seventh Congress, as amended, except that no such return shall be required of the Administrator until six months after the termination of the state of war and that any determination of fair value made in connection with such return shall be made by the Administrator in the first instance, subject to review by the President.

(3) The Administrator shall include in his reports directed to be made under section 11 of this Act a separate part with respect to his operations under this subsection.

(b) During the existence of a state of war, the Administrator is authorized to conduct investigations of and concerning the scientific and technical facilities used or capable of use in war or essential civilian production or supply with the view to ascertaining and evaluating the factors affecting efficiency in such production or supply. The Administrator shall submit to the producers and suppliers concerned, and to all appropriate Federal establishments, his recommendations of any improvements disclosed by his investigations to be necessary or desirable for the national defense or the prosecution of the war.

(c) The Administrator is authorized to represent any agency or establishment before the War Production Board or any other appropriate Federal establishment upon any application for allocation of, and priority ratings for, any critical material and equipment for use in scientific and technical research and development. All such applications shall be made only by and through the Office pursuant to appropriate regulations to be prescribed by the Administrator and approved by the Chairman of the War Production Board.

PROTECTION OF THE PUBLIC INTERESTS IN DISCOVERIES AND DEVELOPMENTS FINANCED BY THE UNITED STATES

SEC. 7. (a) Any provision of law to the contrary notwithstanding, the Office is hereby vested with the exclusive right to use, and with the exclusive right to license others to use, (1) any invention, discovery, patent, or patent right which has heretofore resulted, or shall hereafter result, from research or invention for

Digitized by Google

the carrying on of which the United States or any department, agency, or establishment thereof either has heretofore contributed at any time since the declaration of national emergency on May 27, 1941, or shall hereafter contribute, any money, credit, physical facilities, or personnel; and (2) any invention, discovery, patent, or patent right which is at the time of the enactment of this Act, or shall hereafter become, to any extent the property of the United States or of any department, agency, or establishment thereof.

(b) The Office is authorized, subject to such rules and regulations relating thereto as the Administrator may adopt, to grant to any deparment, agency, or esablishment of the United States a nonexclusive license to use any invention, discovery, patent, or patent right which has been vested in the Office by virtue of the provisions of subsection (a) of this section.

(c) The Office is authorized to grant to others than a department, agency, or establishment of the United States a nonexclusive license to use any invention, discovery, patent, or patent right which has been vested in the Office by virtue of the provisions of subsection (a) of this section upon such terms and conditions, including payment to the Office of a fee or charge for user, as the Administrator may prescribe: *Provided*, (1) That no such license shall be granted unless the Administrator shall first be satisfied and shall find that no monopoly, monopolistic practice, or unfair competitive advantage will be promoted thereby, and (2) that the charge for user prescribed by the Administrator shall either be a uniform nominal fee or a charge graduated to the volume of production resulting from user, or such other scale of charges that shall be necessary or desirable in order to effectuate the purpose of the preceding provisions.

(d) Any owner or assignee of, or any person having an interest in, any invention, discovery, patent, or patent right which has been vested in the Office by virtue of the provisions of subsection (a) of this section shall be paid fair and just compensation for any deprivation of property right resulting from such vesting, to be determined in the same manner as provided in Public Law Numbered 274, Seventy-seventh Congress, as amended, except that the Administrator, subject to review by the President, shall make all determinations in the first instance respecting fair and just compensation: *Provided*, That the Office is also authorized to make suitable compensation, as determined by the Administrator with the approval of the Board, to individual inventors or discoverers or to individuals contributing to inventions or discoveries including employees of the Federal Government, as a reward for their inventions or discoveries or for their contributions thereto when such inventions or discoveries are deemed by the Administrator to be in the national interest and when they are vested in the Office by the provisions of subsection (a) above.

(e) Except as otherwise specifically provided in this Act, neither the Administrator nor any other department, agency, or establishment of the United States shall sell, assign, grant, or otherwise dispose of any invention, discovery, patent, patent right, license, or license right, which has been or shall become vested, acquired, or retained by them or any of them and any transaction or arrangement in violation of this subsection shall be void and of no effect.

(f) The Administrator is hereby authorized and directed (1) to prescribe and promulgate appropriate rules and regulations which shall thereupon have the force and effect of law for the enforcement of the provisions of this section, and (2) to require and incorporate in all licenses, sublicenses, and other instruments and writings made in pursuance of provisions of this Act, such terms and conditions as shall apply the intent and purpose of this section to the facts and circumstances of the particular transaction.

INFORMATION

SEC. 8. (a) It shall be the duty of all persons and establishments, when so requested by or in behalf of the Administrator, to furnish, to the best of their knowledge, any information, data, or record concerning scientific and technical facilities during the existence of a state of war and concerning scientific and technical personnel at all times. Any person or establishment refusing or willfully failing to furnish the same or willfully making any false or fraudulent statement in answer to any such request shall, upon conviction thereof, be fined not more than $5,000 or imprisoned for not more than one year, or both.

(b) The Administrator is hereby directed to maintain the secrecy or restricted character, as the case may be, of any information or data coming into his possession or control under this Act, which is declared to be secret or restricted by other provision of law or the secrecy or restriction of which the Administrator

Digitized by Google

deems otherwise essential to maintain in the public interest. There is hereby established a committee to consist of one member each representing the War Department, the Navy Department, the Office, and any such other Federal establishments as the President may designate which shall advise the Administrator respecting any matter or measure necessary to carry out the purpose of this section.

FUNDS AND FINANCES

SEC. 9. (a) The sum of $200,000,000 is hereby authorized to be appropriated to carry out the provisions and purposes of this Act. Further sums are authorized to be appropriated as may be necessary and proper for the same purposes. Such sums or any part thereof, together with any moneys realized or received by the Administrator from his exercise of any power granted to him by this Act, may be designated and used at his direction as a revolving fund or otherwise to carry out any power so granted.

(b) Further to effectuate the purposes of this Act, the Administrator is authorized, whenever he deems it necessary and expedient, to create or to organize a corporation or corporations as instrumentalities for the more effective exercise and performance of his own powers and duties or those of the Office, or any part thereof. The Administrator may make loans to, or purchase in whole or in part from time to time, the capital stock of any such corporation for any purpose within the powers of the corporation, and on such terms and conditions as the Administrator may determine: *Provided*, That such capital stock shall be purchased and owned only by the Office.

SUBPENAS AND PENALTIES

SEC. 10. For the purposes of any investigations authorized by this Act, the Administrator and any official designated by him may administer oaths and affirmations, subpena witnesses, take evidence, and require the production of books, papers, and other documents which the Administrator or such officer deems to be relevant or material to the inquiry. Such attendance of witnesses and the production of such documentary evidence may be required from any place in the United States or any Territory or possession thereof at any designated place of hearing. In cases of contumacy by, or refusal to obey a subpena served upon any person, the district court for any district in which such person is found, resides, or transacts business, upon application by or on behalf of the Administrator, shall have jurisdiction to issue an order requiring such person to appear and give testimony or to appear and produce documents, or both; and any failure to obey such order of the court may be punished as a contempt thereof. Witnesses subpenaed under this section shall be paid the same fees and mileage as are paid witnesses in the district courts of the United States. No person shall be excused from complying with any requirements under this section because of his privilege against self-incrimination, and the immunity provisions of the Compulsory Testimony Act of February 11, 1893 (U. S. C., 1934 edition, title 49, sec. 46), shall apply with respect to any individual who specifically claims such privilege. Any person who willfully violates any order, rule or regulation promulgated by the Administrator under the authority of this Act shall, upon conviction thereof, be fined not more than $5,000 or imprisoned for not more than one year, or both.

PERIODIC REPORTS

SEC. 11. The Administrator shall render a report in writing to the President and to the Congress in January of each year summarizing the activities of the Office in the calendar year just ended and reporting on the status and progress of science and on scientific and technical problems affecting the public interest together with such recommendations as he may deem appropriate within the purposes of this Act. During a state of war, he shall make interim reports quarterly during each of the months of January, April, July, and October.

SEVERABILITY CLAUSE

SEC. 12. If any clause, sentence, paragraph, or part of this Act shall be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or invalidate the remainder thereof but shall be confined in its operations to the clause, sentence, paragraph, or part thereof directly involved in the controversy in which such judgment shall have been rendered.

Digitized by Google

Senator KILGORE. We have invited the members of the Patents Committee of the House of Representatives to be present for the hearings on S. 702. It will probably be impossible for them to attend today because of the debate now going on on the tax bill, but I hope that they will be present at future meetings.

Congressman Wright Patman has introduced a similar resolution in the House of Representatives, and I hope that he will also be able to be present at the future hearings on this bill.

At this time I want to include in the records of this subcommittee the hearings held in the last Congress on S. 2721, which was similar to the present bill in purpose, but which has been amended in accordance with those hearings and the amendments included in S. 702.

The first witness for today is Judge Arnold, who has been summoned.

STATEMENT OF THURMAN ARNOLD, JUDGE OF THE UNITED STATES COURT OF APPEALS AND FORMER ASSISTANT ATTORNEY GENERAL IN CHARGE OF THE ANTITRUST DIVISION

Senator KILGORE. Judge, I want you to identify yourself for the record and then go along in your own way. The committee will be glad to have any information in reference to patents and patent monopoly, and their effect upon the national economy, both in war and in peace, and also any comments you have to make on this bill if you have had an opportunity to read it, and any suggestions you may have tending to improve it because, frankly, that is the purpose of the subcommittee hearings—improvements in the pending legislation.

Judge ARNOLD. Thank you, Mr. Chairman.

I identify myself as judge of the United States Court of Appeals and former Assistant Attorney General in charge of the Antitrust Division.

As judge, I have no information on this bill at all, but in the Antitrust Division we made extensive studies on patents and the patent question. Since I would be disqualified in any event in cases coming before the court with respect to the investigations in the cases which I tried as the head of the Antitrust Division, I see no reason why I cannot give you as extensive a review of my experience as you care to hear.

I think I will first read a short general statement which I have prepared, and then I will go ahead more or less extemporaneously.

Senator KILGORE. For the benefit of the record, may I state that the principal reason that the committee had for summoning you was the fact that while you were head of the Antitrust Division we had summoned you in the rubber investigation conducted by the Defense Investigating Committee, and I felt at that time you indicated you had information in your hands which would make you a very valuable witness on this bill.

Judge ARNOLD. Thank you, Senator. I assumed that I was summoned to testify before this committee because of my experience with the abuse of patent privileges by domestic and international cartels. To sum up that experience, I think it can be said that the evidence is overwhelming that practically all our shortages in basic materials and in chemicals—the very things that are necessary to give us

Digitized by Google

strength in war and wealth in peace—are due to the control of research and invention by domestic and international cartels. If the committee cares to go into detailed hearings, it will find that the production and distribution of such vital products as magnesium, zinc, rubber, aviation gasoline, beryllium, titanium, electrical equipment, plastics, dyestuffs, machine tools, fuels, communications, and a variety of others necessary for both our war effort and our industrial progress have been impeded and delayed, and in some cases totally blocked, because private groups dominated industrial research.

To break that control, to free our economy in the new industrial age which every forward-looking technician believes is coming, as well as to speed up the war effort, we must break up the patent pools which put barriers against independent initiative in research and invention.

But this alone is not enough. The patent itself is only an instrument of aggressive warfare to stop invention by persons not employed by our great cartels. The control of the "know how", the knowledge of results of basic experimentations, is even more important than patents. Out of that control patent monopolies get their start. It is the foundation on which patent pools are built. This bill is designed to break the corner on research and experimentation now enjoyed by private groups.

Of course, private research should be encouraged. But it cannot be expected to turn over to the public the results of research on which it has spent great sums. Their duty to their stockholders compels them to keep a corner on such research if they can. Private research should be encouraged. But only the Government can preserve opportunity for the inventors and technicians who do not choose to work exclusively for the benefit of a private group necessarily trying to get control of the market if it can.

This bill, S. 702, attacks, I think, the root of the evils of patent monopoly. It recognizes what has been an obvious fact for years; that opportunity for invention by independent inventors is the cornerstone of industrial progress. It recognizes that that opportunity has been denied because the funds to develop the talent of our inventors have been forthcoming only from the groups which seek to get a corner on industrial progress. The bill gives the Government authority to promote such research and make it available to the people as a whole, large corporations as well as small, without discrimination or favor.

Inventions are no longer made in garrets by poor people. They are not possible without the wide dissemination of the results of research and experiment so that each new inventor can stand on the shoulders of those who went before him. And so a great industrial bottleneck has been created because experimentation has been possible only for those who have the financial backing of great corporations. This industrial bottleneck has become narrower and narrower during the past 20 years until the independent inventor for want of a laboratory in which to test his ideas has gone the way of the buffalo. This bill for the first time gives that laboratory to the inventors of the Nation who are not employed by the cartels.

Parenthetically, Senator, I would like to say that my memory of the T. N. E. C. hearings is that you will find that the decline of small

Digitized by Google

business enterprises in this country closely parallels the concentration of industrial research. I do not have the exact pages in mind, but I think you will find it if you study the T. N. E. C. report.

Industrial research is the most vital kind of education we have. Research must be free to the public if it is to accomplish its purpose. Through inertia and ignorance of what was going on we have permitted the control of the industrial education of our technicians to fall into the hands of cartel groups. We have assumed that the state could not afford to subsidize this kind of education. By this neglect of what I think is a vital function of government we have created a situation where the best inventive brains of our country are compelled to work for salaries paid by corporations that can have no interest in giving to others the fruits of their research.

Cartels have not tried to suppress experimentation. They have tried only to corner it. They have kept the savings of new techniques for themselves instead of passing them on to consumers. This has been going on for years and we have just waked up to it. It was not until 1939 that prosecutions and senatorial investigations began to uncover the patent cartels in all the necessities of life. The great synthetic rubber and gasoline patent cartel was formed back in 1929. That cartel was holding back the production of rubber until it could get the new product completely under its control. It was hiding its techniques during the preliminary stages even from the Army and Navy. Had this bill been in effect before the war the Army and Navy would have been as far advanced in the technique of rubber as is Standard Oil. That knowledge would have been spread to the independent industries that were trying in vain to get licenses under Standard Oil domination. The operation of the rubber cartel was not discovered until 1942. Today millions of citizens lack transportation, and the war effort is slowed down, because this cartel had a corner on the technique and the research in rubber.

This bill attacks the fundamental bottleneck by spreading knowledge of modern experimentation and the free use of the results of that experimentation to every competing industry. To allow the conditions which created our patent cartels to continue during and after the war would be the same kind of tragedy as if we permitted private groups to dominate engineering education or even liberal education.

There will be pressure against this bill by great industrial organizations whose control is threatened by the new enterprise and the new initiative which will be liberated by the opportunities which the bill creates.

But I know of no bill before Congress which is so important, not only to promote technical development during the war but also to further industrial development after the war.

Today vast sums are being spent in research and technical development of our national productive plant. Necessarily most of the money is spent with the very corporations whose business policy is to control the market through patents. Such a business policy compels these groups to hold back new inventions until they have received their money from obsolete equipment. It compels them to tie up their inventors with contracts which prevent wide use of new techniques. The bill prevents this domination from being perpetuated after the war at the expense of the taxpayer during the war. It frees

Digitized by Google

industrial progress from private domination of research and experimentation after the war.

Now I am going to give you some brief and, I think, familiar examples of the suppression of research from competing industry and from the public. They are all found in various hearings at which I have testified and in articles which I have written, but I think it may be useful to have a few of them in this record.

I think one of the most amusing ones, not economically important but a perfect illustration of the kind of attitude which the corner on research creates in those who have it, is in a document which was introduced before the Bone committee. It is a memorandum from the files of the General Electric Co., and concerns flashlight bulbs. I will read it into the record.

I quote:

Two or three years ago we proposed a reduction in the life of flashlight lamps from the old basis on which one lamp was supposed to outlast three batteries, to a point where the life of the lamp and the life of the battery under service conditions would be approximately equal. Some time ago, the battery manufacturers went part way with us on this and accepted lamps of two-battery lives instead of three. This has worked out very satisfactorily.

We have been continuing our studies and efforts to bring about the use of one-battery-life lamps. I think you will be interested in the attached analysis which Messrs. Prideaux and Egeler have worked up covering the various points involved in going to the one-battery-life basis. If this were done, we estimate it would result in increasing our flashlight business approximately 60 percent. We can see no logical reason either from our standpoint or that of the battery manufacturer why such a change should not be made at this time.

Messrs. Parker and Johnson now have this matter up with the battery manufacturers and I would urge that every assistance be given them to put it over.

Senator KILGORE. The purpose was to shorten the life of the flashlight bulbs and thereby increase the sales of the product?

Judge ARNOLD. Yes. Now, I am not going to start throwing bricks at somebody who wants to increase the profits of his corporation, but I am pointing out that you cannot expect private business to formulate policies except to profit themselves. I have never felt that this thing was cured by denunciation of these corporations. Obviously their every interest is for their own share of the profits. The answer is your bill, because I don't suppose that the public knew anything about flashlight bulbs. There wasn't any way that they could find out about them.

That is a minor example but it is a perfect illustration of a familiar human attitude. When you turn to something vastly more important, fluorescent lighting, you see these same influences.

I will quote several more documents from the Bone committee, because they are illustrative of how, in order to preserve obsolete equipment and get the money out of obsolete equipment, technological advance is held back.

This is a letter from Howard M. Sharp, manager of the lighting bureau of the Buffalo, Niagara & Eastern Power Corporation of Buffalo, to Mr. Ward Harrison, of the General Electric Co. It is signed by Mr. Sharp as manager of the lighting bureau of that company, and it reads as follows:

DEAR WARD: Increasingly I seem to become the "father confessor" on fluorescent lighting as far as the utility men are concerned. This concerns one of the displays dealing with fluorescent lighting in your G. E. building at the New York

Digitized by Google

World's Fair. I must confess that although I have been in your exhibit twice I did not see this particular display.

It appears that 20 watts of fluorescent lighting are compared with 20 watts of incandescent lighting, the sign purporting to read something to the effect "See the difference between equal wattages of fluorescent and mazda lighting." Of course, the readings on the foot candle meters show dramatic differences.

If this demonstration is as explained to us, I think it does violate the spirit of the understanding that our group had in Cleveland. As a matter of fact, I would think it violated the fundamental concept of the lamp department that advances in the lighting are should not be at the expense of wattage, but should give the customer more for the same money. I hope you can find a way to change this exhibit, so that it does not give misleading impressions to the crowd who will see it.

And here is the answer:

When Miss Winters showed me the attached letter from Howard Sharp I immediately got in touch with Al Reas with regard to the demonstration at the fair. Apparently this particular demonstration was temporarily loaned for use at the fair and is now being returned to the exhibit shop. Therefore, by removing this particular exhibit, Sharp and the other utility men need have nothing to worry about.

Now there, Mr. Chairman, is a thing which runs through American business. Wherever you see patent control developing new techniques which will create financial dislocations if they are put on the market and impair the value of old techniques, you see the new technique stopped.

Senator KILGORE. The purpose of that was to keep the public from seeing that the average cost of lighting by fluorescent methods is cheaper than lighting by mazda methods?

Judge ARNOLD. That is right. The Antitrust Division has brought a suit against General Electric and others charging a conspiracy to control fluorescent lighting. That suit has been postponed until after the war, at the direction of the Secretaries of War and Navy.

The reasons I attribute for this conspiracy are first that fluorescent lighting burns less electricity, and therefore the utilities did not like it, and, secondly, that it makes obsolete the mazda lamp, and therefore the General Electric Co. did not like it.

Had your bill been passed at that time, we would not be so short of industrial lighting today. It is obvious that a Government bureau or a Government authority investigating fluorescent lighting would have discovered this thing at once.

I do not expect industry to act against its own interests. Therefore this is the kind of situation which makes competing Government research essential to progress.

Senator KILGORE. The saving of wattage would have been a saving to the public, but not only that, it would have given us more electricity to use during the war by reducing the load for domestic and lighting purposes?

Judge ARNOLD. That is right. We are so short of fluorescent lighting today that civilian supplies have been cut off, and there is nothing more important in the war effort than electrical equipment.

The point is that while the Antitrust Division can investigate and prosecute cases of this kind such prosecutions are after the suppression has occurred. Had your bill been law, I do not think that this suppression of fluorescent lighting could have occurred, because electricity would certainly have been one of the things the research agency set up by the bill would be investigating.

Digitized by Google

Now I offer for the record a condensed statement of the whole fluorescent suppression, which was introduced before the Bone committee. If you want to reprint it, all right; if not, it can be used just for reference.

(The material referred to was marked "Exhibit No. 2" and appears on p. 28.)

Judge ARNOLD. The Standard Oil rubber is another and very familiar example. Standard Oil entered into a patent cartel with the German Dye Trust. Standard Oil was afraid of competition from synthetic gasoline, so they wanted to get control through the use of patents of synthetic gasoline, and the German Dye Trust wanted to control synthetic rubber, and so they split that control with Germany, and I think that the result is known to everyone.

Here is how the thing worked. The Dow Chemical and the Goodyear Rubber Co. wanted to develop synthetic rubber in 1938. Had they been allowed to do so, no one can estimate the progress that would have been made, because there was no shortage of critical materials at that time. Standard Oil refused to give them patent licenses except on terms which prevented development.

The secret reason was given in a letter by Mr. Frank A. Howard, vice president of Standard Oil, which was that Germany did not want development in the United States.

I quote from this letter:

The thing that is really holding us up, however, is not the lack of a plan either from Goodyear or ourselves, but the inability of our partners to obtain permission of their Government to proceed with the development in the United States.

Standard Oil was sorry about this——

Senator KILGORE (interposing). Their partners were the I. G. Farben industries of Germany?

Judge ARNOLD. That is right.

Senator KILGORE. And I. G. Farben could not act without authority from the German Government?

Judge ARNOLD. That is right. And the German Government did not want I. G. Farben to develop this.

As I said, Standard Oil was sorry. I will read a memorandum of 1938 written by their executive committee:

Mr. Howard deplored the fact that the German Government's restrictions on I. G.'s [The German Dye Trust] freedom of action have prevented our [Standard] making material progress in the American field, particularly as there is some indication that the American rubber companies are making independent progress.

Nevertheless, they sympathized with Germany and decided to abide with the restrictions which Germany imposed. I quote again from another letter from Howard in 1938:

Until we have this permission, [from Germany] however, there is absolutely nothing we can do and we must be especially careful not to make any move whatever, even on a purely informal, personal, or friendly basis, without the consent of our friends. We know some of the difficulties they have, both from business complications and interrelation with the rubber and chemical trades in the United States and from a national standpoint in Germany, but we do not know the whole situation, and since under the agreement they have full control over the exploitation of this process, the only thing we can do is to continue to press for authority to act, but in the meantime loyally preserve the restrictions they have put on us.

Digitized by Google

That was their foreign policy with Germany. Their domestic policy was, of course, to maintain control.

For instance, on February 1, 1940, even after the defense emergency was actually realized, the Standard Oil document with reference to buna rubber reads as follows:

A high royalty rate (7.5 cents lb.) is fixed so as to make the operation practical for the rubber company only so long as the product is used as a relatively high cost specialty.

The only point in rehearsing this—which is familiar to everyone—is, I think, that if we are really going to clean up that situation, it is easier to do it by spreading the information and research about synthetic rubber than a great series of prosecutions afterwards. This thing could have been prevented.

Now, what happened when the rubber crisis was on us? You all know. There was not anybody in the Government who had the research, who could tell which experts were sound and which experts were unsound. The Government did the best they could. They formed one group to handle the thing, and then they had to form another group—they did not have the background to tackle that problem, and it was a long time even after the whole thing was discovered before it was straightened out.

The absurdity of the Government not having that information and having to go to the very people who are interested on the one side or the other for information on the patents is demonstrated by our rubber experience. When government reaches out into industry for expert advice, without a technically trained group of its own it receives nothing but contradictory claims and it does not have the research and the experimentation to determine which is sound and which is unsound.

I offer a short statement of the Standard Oil story.

(The material referred to was marked "Exhibit No. 3" and appears on p. 47.)

Judge ARNOLD. The whole story is already before the Truman committee.

Senator KILGORE. Yes.

Judge ARNOLD. Plastics are another example of the necessity of the research and experimentation by the Government which your bill provides. For your use if you need it, I introduce the testimony given by the Antitrust Division before the Senate Patents Committee.

(The material referred to was marked "Exhibit No. 4" and appears on p. 49.)

Judge ARNOLD. In plastics, even after the patent situation was cleared up, the question of the "know-how" came up. One of the companies whom we were investigating and were about to indict came in and offered to turn loose all of its patents and we said, "Well, why are you so generous?" And the head of the company said, "It won't do you any good; nobody can find out how to use them unless they come to see us." Which was true.

We then demanded that the information, the "know-how" be made free to the public in order to remedy what we claimed was a violation of the antitrust law. This was in connection with a suit against Roehm & Haas which is still pending.

Digitized by Google

I won't discuss the abstract question of whether an industrial concern should be compelled to furnish the "know-how" to other people. I only point out this, that if they are compelled to do so reluctantly, it is going to be very difficult to get it, and the short and easy answer is Government experimentation and Government education to bring the results of this tremendous scientific progress to industry as a whole.

I think I will introduce here a quotation from "Industrial Research and Changing Technology." It is on pages 45 and 46 of the report of the National Research Project on Reemployment Opportunities and Recent Changes in Industrial Techniques.

That report says:

According to the evidence presented, 13 companies employed one-third of the industrial-research personnel reported for 1938: 140 companies, representing less than 10 percent of the number reporting, employed two-thirds of the workers. The remaining third was employed by 1,582 concerns. About 150,000 industrial corporations were without research laboratories. In 9 leading industries one-fourth of those companies which operated laboratories employed between 55 and 90 percent of the research workers in the respective industries.

Now, that situation puts the domination of technical improvement in a very narrow bottleneck indeed.

Senator KILGORE. May I ask you a question at this point? From your experience, what do you believe is the basis of industrial monopoly as it now exists in the world?

Judge ARNOLD. Unquestionably, the domination of research techniques with and without patents. If the Antitrust Act were being passed today, it would not be called the antitrust law, but it would be called the "antipatent law". The trusts were the thing which was uppermost in monopoly control then as patents are now.

However, I don't think we should forget that the patent itself is merely the spearhead of monopoly domination. If you are going to attack the root of the problem, you must get a dissemination of research to the public. I think it is more important today than any other form of education. It is an educational function which the state owes to its technicians.

The effect of turning this thing loose through Government subsidies and research is shown by the war. Look at rubber. I suppose there are literally 50 known ways of making rubber, all of which are, at least to some extent, practicable, and yet in 1938 nobody had any idea whether it could be made at all.

Senator KILGORE. Recently on a visit to one of our new rubber plants—I believe it was United States Rubber, it was a polymerization plant—the management informed a subcommittee of which I was a member that the company, once the "know-how" and the right to use it, had been able to increase the production of a built plant 30 percent in 2 weeks of experimentation on their polymerization process by being able to run the stuff through the tanks faster. They were practical rubber people and they were able to use the "know-how" which they obtained from the Standard laboratory to push up the production 30 percent.

Judge ARNOLD. We have been accustomed to think of the power to restrict production as wealth. For instance, you have a research laboratory and power to limit anybody else from using that knowl-

Digitized by Google

edge. You sell stock in this power to restrict production, and then claim that anyone who wants to free the industry is taking away corporate property. The fundamental thing that was back of our 9,000,000 unemployed—idle capital and idle labor—was the fact that we have put money values on the power to restrict production, and have assumed that turning industry free was regimentation.

I made a little list, Senator, of the objections I have heard to this bill. And, incidentally, one of the first is that this bill regiments industry.

Senator KILGORE. I would like to get your reaction to that.

Judge ARNOLD. Well, I have heard that the regimentation of industry is supposed to come because your bill does not give the patents to the people who are employed by the Administrator. The charge is that the inventor's incentive is therefore taken away. I think I am safe in making the statement that the formal agreements in every single industrial corporation compel the inventor to sell his patent for $1 or some equally nominal amount.

Senator KILGORE. We were informed by representatives of the Army that in all of the research now being done at the expense of the United States Government in the various leased laboratories by the various corporations, the scientists are still operating under contracts with the laboratories which automatically give the laboratory or the corporation all patents by assignment. Is that correct?

Judge ARNOLD. Yes.

Senator KILGORE. That is, developments are being made at Government expense for an exclusive monopolistic patent after the war is over?

Judge ARNOLD. That is right. While we did not survey all the industries in the United States while I was in the Antitrust Division, I don't think we found a single contract in which the inventor got his patent.

Senator KILGORE. What would he get in lieu of it?

Judge ARNOLD. He would get $1 from the big corporations and $25 from the little ones. It was a nominal consideration, anyway.

Senator KILGORE. This bill provides that the inventor can be paid by the Director a reasonable value for the idea that he has developed. I think that is much better than the $1 or the $25 or the $45 which an inventor now gets, and would constitute more of an incentive.

Judge ARNOLD. I will say that thet large corporations did give bonuses for extra work. We did not find that. But the point is that the inventor's incentive was not the right to get a patent—the patents belonged to the corporation.

So much for the regimentation and the lack of incentive for the inventor—that argument against the bill is complete nonsense.

The next objection is that it puts science in a straitjacket—on the theory that if the Government starts any sort of research it will in some way impinge upon science.

I think probably the best answer to that is the magnificent work done by the Department of Agriculture. The reason that we have such magnificent Government research in agriculture and not in business is that the farmers never were organized, and so the big farmers did not attempt to get control of research development and research techniques. I think you should probably get a Department of Agriculture expert to testify on what they have done. It is simply start-

Digitized by Google

ling. And the benefit has been to the entire people instead of to a small privileged group.

The reason the Nation got that benefit from agricultural research is that we were not dealing with a cartelized industry in the first place. There were no special-privilege groups to claim that governmental research in agriculture was regimentation.

Senator KILGORE. Agricultural research was stimulated by the Government's activities, rather than put in a straitjacket?

Judge ARNOLD. It was. Not only was it stimulated, but private patents—mind you, this bill in no way interferes with private research—private patents on corn and seed and everything else multiplied. The private inventor could go to the Department of Agriculture and get all the information that was available from all of their research, and stand on their shoulders and get his own patents. So the Government research did not interfere with private research at all—rather it encouraged the private inventor. They are not called inventors in agriculture, but they really are. It did not restrict private initiative or stop the private inventor from getting patents.

Dr. SCHIMMEL. Would the development of hybrid corn be an example of what you are speaking of now?

Judge ARNOLD. Yes. There are a number of patents on hybrid corn. I believe orchids are patented. Roses are patented.

Senator KILGORE. Judge, I have here a clipping from the Washington Times-Herald, I think it is, under date of March 14, in which one Dr. Gustav Egloff, of Chicago, attacks the bill as totalitarian. Do you know who he is?

Judge ARNOLD. He is the research director of the Universal Oil Products Co., controlled by Shell and Texas. It is part of the C. R. A., which is the Catalytic Research Association. Among the members of the C. R. A. are Standard Oil of Indiana, Standard Oil of New Jersey, Shell, Texas, Kellogg, and, up until the war, I. G. Farben Industries of Germany.

Senator KILGORE. He is listed here as president of the American Institute of Chemists and spoke as such. That organization, of course, is the owner of a lot of exclusive patents?

Judge ARNOLD. That organization is a patent licensing organization. If I am not mistaken, they manufacture nothing. Of course I do not wish to impugn Dr. Egloff's sincerity—if I were the head of an organization which was dependent for its monopoly position upon keeping research from the public, I would think that anybody who interfered with that was a totalitarian. You see, these fellows get the idea, and perhaps I would myself if I had a patent pool—I don't happen to have any—that a patent pool is property. Now when the Government starts disseminating information it destroys the value of the exclusive information controlled by the pool. And therefore it takes away property. And the totalitarian states take away property. And therefore the bill is totalitarian. They are very sincere about it. They work themselves up into a high state of rage. They pound the table. But back of the whole thing is this: The bill will interfere with their special privileges.

In other words, if Dr. Egloff—if the Universal Oil Products Co.—should come and testify for this bill, I would look through the bill for a joker. And I say that without impugning their sincerity at

Digitized by Google

all. No doubt they would consider that they were acting in all sincerity.

Senator KILGORE. Judge, in reading this bill, have you found anything that interferes in the least with the patent rights of an individual or of a corporation to go ahead and develop an idea of their own—except that in time of national emergency the Government may require them to relinquish the "know-how" and pay them for it for use to protect the Government?

Judge ARNOLD. No, sir. There is not the slightest——

Senator KILGORE (interposing). These companies can go ahead operating under this bill on the patents they actually own without any trouble? It simply puts competitors into the field?

Judge ARNOLD. It allows thousands of individuals and small corporations to get into the picture. The large corporations will really have to put their research laboratories on their toes. And if these research laboratories are as good as I think they are, they will utilize the information which the Government experiments give them and go ahead at an increased pace. That is the only effect that it is going to have.

The only "property" it is going to take away is the corners on research which these people have.

The interesting thing is that these corners on research have happened only in industry, where they started out with a cartelized structure. Nobody has even suggested that the agricultural experimentation is totalitarian—that it takes away property.

Dr. SCHIMMEL. I gather from your statements that one of the most important purposes of industrial research now is to corner developments and to maintain them to create a monopolistic position?

Judge ARNOLD. I would put it more charitably than that. A great corporation builds up a research laboratory. This is not a question of ill will, but they have to make profits—they have dividends that have to be paid. I suppose if you were the head of that corporation, and spent that money, and then turned the information loose to the public or to your competitors, you would not be president or a director very long. It is inherent in the situation that they must attempt to maintain a corner. And I have no objection to their doing it, if at the same time there is some public agency which is investigating for the benefit of the smaller businessman.

Dr. SCHIMMEL. But isn't there a danger there that the big companies will stop encouraging any research if its monopolistic value is curtailed?

Judge ARNOLD. Quite the contrary. Not only will they not do that, but they will be compelled to move faster. A company gets big because it moves ahead of its competitors. Now, let us make the race fast enough so that these fellows will really run.

Edsel Ford, testifying in the T. N. E. C. hearings, said the reason that the Ford Motor Co. grew was that, "We kept ahead." The declining company is the one which gets itself into the position where it does not have to get ahead of its competitors. And then what does it do? It suppresses fluorescent lighting in order to pay off on obsolete equipment. Research turns around and goes the other way, because you have a situation where the financial reward lies in that direction.

I don't think that we should blame these companies for trying to

Digitized by Google

make money. I believe we should blame the Government for creating a situation where more money can be made by dominating a field and suppressing research than by keeping ahead of the other people.

Senator KILGORE. Last night I was told by the head of one of our biggest corporations that if by an act of God every plant they had and every piece of equipment and every record were all destroyed, but if they kept their research, their technical, supervisory, and administrative personnel as a unit, that it was his firm belief that he could raise enough money to rebuild the plant; but if they lost their personnel, regardless of the organization, he did not believe that they could operate the plant; the "know-how" in that outfit is worth more than all the equipment.

Judge ARNOLD. Of course, there is a school of what I call the security economists, with banker psychology, which says that unless feather beds are put under all of our industrial concerns so that they cannot lose money—so that they are not threatened by more efficient people coming up—they will disappear from business. Well, if I thought that of American business I would be very discouraged. But actually, as the war has shown, there is bubbling up all over America the most tremendous outburst of energy and ability. It is not true that American business needs a feather bed.

Senator KILGORE. Have you ever found that there is any feather bed under what we call small business?

Judge ARNOLD. Oh, no; that is supposed to be a "way of life" and not business—like farming.

Now, you suggested that I might criticize the bill, and I do have one objection to it. That is, while it may be implicit in the bill, it is not expressly set out that the Government should protect its licensees against what I call the patent blitzkrieg. I am going to introduce into the record one of our cases where we collected fines—a short case history to show what happens to small business when you permit them to be subjected to the expensive litigation which a large business can put on them, even though, as I will show a little later, of these patents that are taken out by American industry, probably only about 1 in 10 is valid. The only thing that keeps them good is the fact that they are able to throw the small businessman into years of litigation.

Here is this case history from the building industry, which is one of our most backward industries. It concerns the manufacture of air filters, which, incidentally, are today very much needed in national defense.

In 1924, the manufacture of air filters was in its infancy. In December of that year, an American patent was issued to a German citizen. It was a shaky patent, and it is a curious fact that the same device was declared invalid in Germany because of lack of invention. Company A got hold of this patent. Incidentally, I would like to put the indictment in the record. I am using letters of the alphabet to designate the different companies, rather than their real names.

As I said, company A got hold of this patent. It got together with company B who had another patent on air filters, and out of this came company C, a patent-holding company. Company C acquired two of its competitors, D and E. It was then big enough to begin the infringement-suit racket. The result was that under duress it absorbed companies F, G, H, I, J, and K.

Digitized by Google

Of course it did not take over all the outsiders. Company L was a little fellow not strong enough to defend an infringement suit and it was, therefore, ruthlessly destroyed.

These astounding results, based on an all-out patent offensive, were brought about despite the fact that the officials of company A were strongly of the opinion that the principal patent was invalid all the time. All in all, this patent pool acquired 105 patents. The only suit ever tried ended in a declaration that the particular patent was worthless. Most of the patents were never tested. The very purpose of such schemes is to avoid court tests. Finally, out of 16 competing manufacturers in 1925, all of them except 2 were either crushed or brought into the ring.

Recently these air-filter companies were indicted. They paid $88,000 fines, but they still have their patents which are today susceptible of being used again in the same way.

Now, let us assume that the Government is interested in air filters. Assume that the Government will license and protect these little companies against these patent schemes—this bill will have the effect of cleaning out these tens of thousands of patent combinations which now handicap industry because the validity of the patents never comes before a court.

If you can put into this bill a provision, very easily drawn, compelling the Department of Justice to defend the rights of licensees against infringement suits, I can assure you that not very many infringement suits will ever be brought. The small man needs that protection. I don't think you can call it the fault of the Patent Office, but, for instance, there are about 60,000 patents issued every year by the Patent Office. I had somewhere the figures of the tremendous number of patents which the individual Patent Office employee had to pass on. When application for patents flood the Patent Office they of course cannot keep up with them, and there is simply no way of preventing these patents from being issued.

Now, think of those 60,000 patents a year, and let us look for a moment at the patent policies which compel the applications to be made. I will take a patent policy which was brought out in the Hartford Empire suit. Here was the patent policy of Hartford Empire—I will quote it:

> (*a*) To cover the actual machines which we are putting out, and prevent duplication of them. * * *
> (*b*) To block the development of machines which might be constructed by others for the same purpose as our machines, using alternative means.
> (*c*) To secure patents on possible improvements of competing machines, so as to "fence in" those and prevent their reaching an improved state. * * *

Here was a patent policy aimed at blocking invention and preventing patents of others from reaching an improved state.

That is typical. Of course, that is not put on the application that goes to the Patent Office. And the Patent Office issues 60,000 patents every year.

Such patents could not even be applied for, in my opinion, if the Government had facilities for research and offered protection to its licensees. And so I think that it would clean up the existing patent muddle.

Dr. SCHIMMEL. In your study of fluorescent lighting, did you find that the whole development was held up a number of years?

Digitized by Google

Judge ARNOLD. Oh, yes.

Dr. SCHIMMEL. Even though they held up this development for years, didn't they at the same time do enough research so that if anybody else developed it, they would be able to come in with a patent infringement suit?

Judge ARNOLD. They now are. Even at the time that they were suggesting that their efforts in the war effort were so great that they could not indulge in any litigation at all, they were suing the Hygrade Sylvania in New York City to keep Hygrade Sylvania from making electrical equipment. So they were actually using this patent pool during the war to stop the development by others, while the antitrust suit was being continued.

Senator KILGORE. They said they did not have the time to defend, but they had plenty of time to attack.

Judge ARNOLD. That is right. They were expending all their energies on attacking and they did not have enough energy to defend. Of course, that is the policy. And the smaller fellow—Hygrade is a small company, but it is strong enough to defend that suit—the smaller fellow is usually put out of business.

If you care to subpena the Department of Justice records, or if you go through the Bone committee's file, you will find it make abundantly clear that not even the industry itself believes in these blocking and fencing patents.

For instance, we indicted Wayne Pump. The indictment was dismissed because of certain technical defects, but they were reindicted. They had patented the idea of a pump that computed the price of the gasoline sold. Of course, if you can get a patent on an idea you can control the industry.

I will read you a typical example of the many statements which the Department of Justice has on patent policy. In answer to a rather naive inquiry from one of the members of his staff, Mr. C. L. Bausch, of the Bausch & Lomb Optical Co., told why the company continued to pay royalties on worthless patents. He wrote:

> A great many of the patents that we are operating under are very weak and if we wished to, we could break them outselves and not pay royalties, but good business judgment, I believe, justifies the idea of paying royalties even on weak patents in order to maintain a price control picture that is helpful.

Here is another memorandum from Mr. Bausch. This, of course, is the optical cartel which practically stifled the development of military optical goods in this country. He wrote in September 1938:

> Of our sales in 1937 about half of the products sold were protected by patents, roughly $5,000,000 on which we paid an average of 5 percent royalty, $250,000 to outside sources for protection on our product and for buying the means of accomplishing price control. A great deal of money, but apparently justified by the figures in most cases.

Thirty-four million people in the United States need spectacles and cannot buy them because of the controlled price of spectacles. In the *Univis case* they had what I call an umbrella patent. The thing that they had invented was the position of the segment. It was very difficult for us to see any invention in that, but we were prosecuting them under the antitrust law, and the question did not arise. The thing that they had patented was the spectacles themselves. By getting a patent on the spectacles which contained this invention, they got control of the grinding, and the polishing, and all such unpatented arts. The

Digitized by Google

Supreme Court held that that was an illegal device and in violation of the antitrust law, but the point is that Government research and Government licensing would have made that cartel impossible from the beginning. It would not be a question of the Antitrust Division spending hundreds of thousands of dollars and going through these very difficult dissolution suits and years of investigation. The thing could not even start if Government research existed.

Senator KILGORE. Is that monopoly the basic reason for the fixation of prices by localities? I know that in one city you could get a pair of glasses for $15, but if you went to another the identical pair would be $20. Some place else they would be $25.

Judge ARNOLD. In Washington you can get them as low as $7.50. This is how they do it. The Ideal Optical Co. in 1938 announced spectacles for $7.50, just half of the prevailing Washington price. The spectacles were all right—I am wearing a pair of them now—because, of course, these are not expensive articles. And immediately their supply was cut off.

Senator KILGORE. But you might have a compound lens in one, you may have a more expensive lens.

Judge ARNOLD. The same is true of the compound lens. The Ful-Vue was a compound lens and the Univis was a compound lens.

Senator KILGORE. When you mention spectacles you mean the lenses themselves?

Judge ARNOLD. No; the whole thing is controlled. There are patents on the frame, and there are patents on the lenses, there are patents—well, let me read you a document from M. J. Root, of Shur-On, which is a member of the spectacle cartel. Here is the statement of patent policy. He wrote to a Shur-On employee as follows:

Frankly, the Ful-Vue patents are so weak that they are a tremendous task to uphold, because the American Optical Co. cannot be too severe in its tactics in keeping the licensees in line, because if they were forced to bring suit, the patents might be knocked out and the whole Ful-Vue license system would topple, and Ful-Vue and Hi Bo products could then be made by anybody at any price, and the nice margin of profit in this business would be lost.

That gives you the idea.

In other words, the Ideal Optical Co. is told that they cannot get supplies. And how much money can the Ideal Optical Co. spend in forcing those people to give them supplies, by suits for damages and all that sort of thing? And that is the picture.

I will give you one more example for the record. This is from the T. N. E. C. hearings, and concerns the Hartford Empire patent pool [reading]:

The Amsler Morton Co. has been manufacturing glass machinery ever since 1915. In 1934 it was told to stop or to sell out for what it considered an adequate price. Litigation commenced. Its customers were circularized advising them of the dangers of buying from the company. An infringement suit was begun against a customer named Swindell. I quote from the testimony of the treasurer of Amsler Morton:

"Q. Can you tell me how much the Swindell litigation cost your company?

"A. Well, it was tremendous for a small concern.

"Q. How much was it?

"A. It amounted to close to $50,000, and that doesn't take into consideration the expense of our organization.

* * * * * * *

"Q. I would like to ask you this: You told us, I believe, that you have sold only one lehr so far this year?

Digitized by Google

"A. That is correct.

"Q. That you sold no lehrs last year. What would you say the value of the glass-manufacturing machinery business is now? That is, your business.

"A. I will give you a comparison. In '28 we were doing $800,000 worth of business and last year we had $18,000 worth of business in the glass industry—quite a drop."

Their business dropped from $800,000 to $18,000 while the litigation was going on.

Just take that with the air-filter case. And take another example which I think might be useful, the *Masonite case*, which we won in the Supreme Court. There there was a number of hard-board manufacturers. The two leading ones got together. One of the favorite devices is a settlement of litigation. Here is the settlement of litigation device: A patent pool is of doubtful validity, so we do not form a patent pool, but I will sue you and then we settle the litigation and now we are together. In the *Masonite case*, at the end of the operations of that pool, there was only one Masonite hard-board manufacturer in the United States.

And there is a patent, curiously enough, on the use of anything in making hard board. One of the Justices of the Supreme Court in the argument of that case said, "Do you mean to say that under your patent you could prevent them from using sugarcane in making hard board?"

And they said, "Yes; it is a patent on any form, an idea patent."

The record shows that they did not believe in it very strongly, but that is not necessary in conducting the patent blitzkrieg.

Now, let us take that *Masonite case*. I think that it is an idea patent, and I don't believe it will be sustained on all materials. If the Government, operating under this bill, develops competing methods of making hard board, and will defend its licensees, you will keep that Masonite monopoly from dominating this new technique.

I would earnestly suggest that that sort of an amendment be made, and it will be very simple—just that the Government is directed to protect its licensees.

Now, I think we can take a leaf to some extent out of Germany's development of drugs. I was told by the head of Imperial Chemicals that the German ascendancy of drugs arose from the fact that they could not get any private industry in England interested in drugs. The fundamental invention that made I. G. Farben great was the product of an Englishman's brain. He could do nothing with it in England, and so he went over to Germany. The thing we need not take out of Germany's book is that Germany entered into a cartel between the company and the Government.

Senator KILGORE. In other words, they use cartels frequently in lieu of diplomacy?

Judge ARNOLD. Well, that is the essence of fascism—a complete partnership between Government and monopolies. But the point is that they subsidized research, and that is what made them strong. And, in turn, failure to conduct sufficient research was what handicapped the democracies.

Now, as to the international aspects of this, and I think this bill does have international aspects: I don't know what is going to happen after the war, but I would like to read from a pamphlet entitled, "A National Policy for Industry."

Digitized by Google

(The pamphlet referred to was marked "Exhibit No. 5" and appears on p. 80.)

Judge ARNOLD. The signatories are about 120 of the leading British businessmen. They include Lord McGowan and Lord Melchett of the Imperial Chemical cartel, and these people quite sincerely say as follows:

> Where similar products are manufactured in different countries, these international agreements (which necessarily imply that the parties to them are able to speak for the major share of the industry concerned) are essential to keep production equitably allocated between countries and companies, in tune with the maximum world demand attainable. They exercise a stabilizing influence against violent fluctuations and dislocating shifts of the currents of trade and thus have an essential part to play in post-war reconstruction, when international economic cooperation for the general benefit will be of the highest importance.

In other words, here is a substantial group which sees no salvation for the world outside of the operation of international cartels. I do not think we need concern ourselves with British policy. If they choose to form international cartels, that is all right, but the point is that now more than ever do we need to encourage our own research so that this development of products and this exchange of information between countries is not exclusively cornered by these international cartels. Let us hope they do a lot of research, but there is no good reason why we should delegate the entire power over research to these international groups.

Senator WALLGREN. I wonder if you have any further recommendations on this bill?

Judge ARNOLD. I read it, and it seems to me that that is the only recommendation I would make with respect to substance. I did not read it with the idea of evaluating technical details, because I think my testimony is of value only with respect to the monopoly aspects.

Senator WALLGREN. You are so thoroughly acquainted with all of these unfair practices, I wonder if you could inject something here which would help to straighten out this matter.

Judge ARNOLD. The whole problem is simple; it is just the problem of public education in industrial progress. The bill can be very simple, and I think this bill is.

Senator KILGORE. And the stimulation of competition?

Judge ARNOLD. That will necessarily follow.

Senator KILGORE. In other words, furnishing to the American businessman the same service that the Department of Agriculture furnishes to the American farmer?

Judge ARNOLD. That is right.

Senator WALLGREN. You do think this provision to protect licensees is very important?

Judge ARNOLD. Very important, because I can show you hundreds of instances of the patent blitzkrieg. I gave you only two, but there are hundreds. Of course, if the Government licenses somebody and then tells him to protect himself, he cannot stand the litigation expense.

Senator KILGORE. The theory there would be that we protect him somewhat like we do in wartime when we infringe on patents by the Government defending the suit?

Judge ARNOLD. That is right. Simply an addition to the provision in the bill licensing these patents to anyone. The Government, I think, should defend its position. For instance, the Govern-

Digitized by Google

ment might distribute the results of some of its research without trying to take out a patent because in its opinion it was not something on which a patent should be taken. And in that case the Government should protect the user from an infringement suit. If, on the other hand, they thought it was a patentable article they should protect the patent.

Senator WALLGREN. Let us say that we are setting up today a new research laboratory; for instance, I had an appropriation in the appropriation bill to create a metallurgical laboratory out west. If a Government employee patents a process, how would you handle that situation?

Judge ARNOLD. I presume you could make your own contract with the Government employees.

Senator KILGORE. The bill provides for that, and in general the directors shall pay him a bonus for his services commensurate with the value of the patent, and it shall not be patented by anybody then, and the Government reserves the right to license anybody to make it on the same basis.

Judge ARNOLD. You must also protect licensees who use discoveries made by the Government. If you protect them, most of these infringement suits would never be brought—not if the Department of Justice with adequate personnel were on the other side. If the Government lost, all right; at least we would have turned it over to a court of competent jurisdiction.

Senator KILGORE. If you remember, Judge, in the Nye committee investigation in regard to munitions, the fact was brought out that after the last war all of the research developed at the expense of the United States, or a large part of it was submitted to foreign manufacturing companies that were in cartels.

The same was true with armament equipment—torpedoes designed for the Navy were submitted to manufacturers in Germany under agreements for mutual exchange of information.

Judge ARNOLD. I think the remedy is not to expect a businessman to act other than as a businessman, but for the Government itself to turn loose this corner which has been developed.

I would like to see this bill referred to as the magna carta of science, because I think if it is passed it will be one of the greatest single events in the scientific development of this country. I feel that strongly about it. I believe it will not only open new vistas to Government, university, and industrial research but it will greatly stimulate all scientists and technologists. It will provide a focal point for all of them and weld all branches of science together with real and lasting benefit. I believe every man who recognizes the importance of our science, and that should include about everybody, should do all they can to support this bill.

I recognize the difficulties of the thousands of technicians that are tied up with special interests. You cannot expect them to come out and act in opposition to the interests of the companies they represent. I think the only reason that there won't be almost a unified support of the bill among scientists, as there is in agriculture, is the fact that so many of them have become tied up with large concerns whose interests are against the bill.

Senator WALLGREN. In other words, that statement of Dr. Egloff was really an endorsement of the bill?

Digitized by Google

Judge ARNOLD. I don't know Dr. Egloff personally, and I do not mean to be critical, but what other position could he take?

Senator KILGORE. He must protect his personal interest.

Judge ARNOLD. And I think he is quite sincere in identifying the public interest with private interest. It is very difficult to avoid that.

Mr. COLLINS. I understood you to say, Judge Arnold, earlier in the hearing, that statistics showed that 150,000 of the 180,000 small businesses had no research facilities at all?

Judge ARNOLD. I took that from a report which I identified.

Mr. COLLINS. I gathered from your discussion of small business there, that the relative decline of small business might be attributed in part to this technological and scientific bottleneck that they are getting into.

Judge ARNOLD. There is no question in my mind that wherever you turn in industrial development you will find that the scientific bottleneck has prevented them, with all of their energy and initiative, from getting to the top.

Senator KILGORE. I am informed that it has been a custom with a lot of these licensing monopolies or licensing outfits that even where they represent themselves as licensing freely to anyone they have a sliding scale so that the small manufacturer has to pay a commensurately larger royalty than does the big manufacturer, thereby eliminating the small manufacturers from any competition.

Judge ARNOLD. That is right. I testified on that in the Bone committee hearings as one of the patent devices.

For your information, I would like to introduce here my statement before the Bone committee—testimony on a different bill—describing the various methods by which patent control was accomplished.

(The material referred to was marked "Exhibit No. 6" and appears on p. 91.)

Judge ARNOLD. As illustrations, there are what I call the umbrella patent, the accordion patent, the patent pool, licenses to restrict use, licenses to restrict production—I think I have most of them in there if not all of them. I do not, however, describe the sliding scale device in that testimony. If you care to subpena the members of the Department of Justice, I think they have a good deal of information on the sliding scale, Senator.

Senator KILGORE. Then there is one phase of this bill that you might feel is dangerous, the proviso that, on page 17, line 4:

> No such license shall be granted unless the Administrator shall first be satisfied and shall find that no monopoly, monopolistic practice, or unfair competitive advantage will be promoted thereby;

and

> (2) that the charge for user prescribed by the Administrator shall either be a uniform nominal fee or a charge graduated to the volume of production resulting from user.

Judge ARNOLD. I don't think so. There is nothing per se wrong about a sliding scale. It is true that you can use a sliding scale in the manner which you suggest, of course. I see no objection to encouraging production by charging a man less royalties the more he produces.

Mr. COLLINS. Could it be used otherwise?

Digitized by Google

Judge ARNOLD. Of course, we would assume that the Government administrator did not have any interest in creating a monopoly. I notice that my former colleague, Mr. Borkin, thinks it is better to leave it out. I saw no objection when I read it over.

Mr. COLLINS. Do you know what the situation is with the patents now held by the Alien Property Custodian? Have they acquired a great block of them?

Judge ARNOLD. Of course they have, but with respect to that, comity with other Government departments would indicate that I would rather have them testify.

Dr. SCHIMMEL. This bill would require that those foreign patents that have been seized would become the permanent property of the United States. What would your opinion be as to this feature of the legislation?

Judge ARNOLD. I think that is a valuable feature.

Senator KILGORE. That would prevent any future change of administration of that office from permitting that big pool of patents to become a monopoly.

Judge ARNOLD. You remember what happened in the last war—the patents all got back into German hands almost immediately following the war. And there are very many agreements in the Department of Justice where they can show you instance after instance where the American firm—I would not care to testify extemporaneously on this but I will speak generally—where the American firm has a secret understanding with the Germans that although it has taken the patents as an American firm, nevertheless it is protecting their interests and they will get their equitable interests back after the war. We find that repeated, and you can get that for the record by subpenaing the Department of Justice, I am sure.

Dr. SCHIMMEL. Do you think there is still time to use a bill of this kind to spread techniques in order to prosecute the war more favorably? We have run into so many situations already.

Judge ARNOLD. I was talking to Mr. David Podell, the head of our Small Business Unit, and he gave me half a dozen instances which he wanted me to suggest to the committee, but I thought that I had better confine myself to what had happened before I was on the bench; and so I would suggest that you subpena Mr. Podell, and you will just find instance after instance. Of course, there never was a time when this thing was more necessary, and he can show you case after case after case. There are cases coming from the Department of Justice and from the Treasury, which has the power to suspend royalties in a monopolistic situation. There are complaints coming from there, and the thing piles up into a very formidable body of material—all instances of this kind.

Mr. COLLINS. Section 7 (c) provides that the Administrator is authorized to grant nonexclusive licenses under certain terms and conditions and that—

> no such license shall be granted unless the Administrator shall first be satisfied and shall find no monopoly, monopolistic practice, or unfair competitive advantage will be promoted thereby.

I would like to get your opinion on the desirability of that proviso. Is it true in your experience that the granting of a nonexclusive license to all comers might in itself result in monopoly by existing monopolies

Digitized by Google

in securing a license, and then in some way restricting monopoly through that acquisition?

Judge ARNOLD. I don't think that I have ever seen an actual instance where a nonexclusive license would promote monopoly. Nevertheless you can imagine a small, struggling concern getting hold of some new patent, and being unable to maintain itself if it is compelled to license a company that dominates the field. Rather than argue with people about that hypothetical situation, I would not advocate compulsory licensing on a hard and fast rule. One theory of patents is that they are intended to protect small, struggling concerns.

Senator KILGORE. It was like the tariff that was supposed to protect infant industries.

Judge ARNOLD. I mean that you should not tie your Administrator down too tight. I would just assume that if this bill is passed, you will have an administrator that will use good judgment. Of course, he would have to use good judgment—remember the infant industries which the tariff protected. The Administrator could conceivably protect some infant patent industries and abuse this provision.

Mr. COLLINS. On a nonexclusive licensing basis it would be possible to license corporations that might secure the license for other than the national interest. There might be alien corporations operating, or alien-controlled corporations operating in order to get a license. Do you think it would be necessary to have any language protecting the national interest in that respect?

Senator KILGORE. As long as the license were nonexclusive, I don't see how it could, even if it were granted.

Judge ARNOLD. I don't believe in giving this patent administrator a lot of general powers to protect defense, and to protect this, or that, or the other thing. Most of the patent rackets protect, you know.

Senator KILGORE. If there is nothing further, we certainly appreciate your coming here and giving us the benefit of your experience. We will now recess subject to the call of the chairman.

(Whereupon at 4:20 p. m., the hearing was recessed subject to the call of the chairman.)

EXHIBIT No. 2

STATEMENT OF JOHN W. WALKER BEFORE THE SENATE COMMITTEE ON PATENTS REGARDING THE ACTIVITIES OF GENERAL ELECTRIC CO. AND WESTINGHOUSE ELECTRIC & MANUFACTURING CO. WITH RESPECT TO THE DEVELOPMENT OF THE FLUORESCENT LIGHTING INDUSTRY

INTRODUCTION

I appear here in obedience to subpena duces tecum served upon me and upon my superior, Mr. Thurman Arnold, Assistant Attorney General. Pursuant to these subpenas, I have produced here this morning 68 exhibits relating to the development of the fluorescent lighting industry and the control exerted upon such development by General Electric, Westinghouse, and the public utilities. These exhibits are for the most part copies of communications and other documents furnished principally from the files of the General Electric Co., Westinghouse Electric & Manufacturing Co,. the Electrical Testing Laboratories, the Association of Edison Illuminating Companies, Edison Electric Institute, Buffalo, Niagara & Eastern Power Co., and Consolidated Edison Co. of New York.

These documents and the facts they disclose were revealed to the Government as a result of a general investigation, commenced by the Department of Justice in 1939, of the electric lamp and lighting industries. A part of the documents were obtained by inspection of the files of certain of the above-named companies undertaken with their consent, and the remainder of the documents were obtained pursuant to subpenas issued in November and December 1940 by a grand

Digitized by Google

jury sitting in the southern district of New York. Due to a shortage of manpower in the Department of Justice, the investigation was not continued after December 1940, and the documents and facts disclosed therein, which I have produced here, go up only to the end of 1940.

It may be mentioned that as a result of the geenral investigation of the electric lamp and lighting industries a civil suit was filed January 27, 1941, by the Government against General Electric and Westinghouse Electric & Manufacturing Co. and other companies, with respect to incandescent lamps, charging them with monopolizing, attempting to monopolize, conspiring to monopolize, and conspiring to restrain trade and foreign commerce all in violation of the Sherman Antirust Act and conspiring to restrain foreign commerce in violation of the Wilson Tariff Act.

Although the documents which I produce here go up only to December 1940, or a year and half after the commercial introduction of the fluorescent lamp, the activities revealed by these documents are considered by me to disclose an attempt by General Electric Co. and Westinghouse Electric & Manufacturing Co. and the public utilities to obtain control of the fluorescent lighting industry during the period of its development and to regulate the industry in conformity with their respective interests.

THE FACTS

SUMMARY

At the time the fluorescent lamp was commercially introduced by General Electric and Westinhouse in the summer of 1938, the utilities were filled with grave concern, principally because of the belief that the new illuminants would consume far less electricity than incandescent lamps which theretofore had been in general use. The utilities desired to have development of the fluorescent lighting industry retarded to the greatest possible extent. General Electric and Westinghouse, for their part, wished to enlist the support of the utilities in the efforts and plans of General Electric and Westinghouse to establish and maintain control over the manufacture and sale of fluorescent lamps and equipment for their operation.

General Electric and Westinghouse and the utilities have sought to prevent the new fluorescent lamp from being used by the public on any basis that would reduce the consumption of electricity. At about the time the fluorescent lamp was first put on the market, they jointly formulated a plan whereby fluorescent lamps would be used only for special "plus" lighting purposes, such as illumination of showcases and for lighting supplementary to that of incandescent lamps. This policy for a time was successfully followed. However, the so-called independent manufacturers commenced to sell fluorescent lamps and to inform the public that they could save on their electric-light bills by using such lamps. As a result, General Electric, Westinghouse, and the utilities had to formulate a new program, and they developed the policy of advocating fluorescent lamps for "high intensity" lighting, which would consume as much electricity as would ordinarily be consumed by incandescent lamps. It became apparent that in order to control the fluorescent lighting industry so as to safeguard their respective interests, the manufacturers of fixtures and auxiliary equipment required for operation of fluorescent lamps would have to be organized and controlled by General Electric, Westinghouse, and the utilities. They formulated a program to effect this purpose.

The principal factor that made it impossible for General Electric and the utilities to completely retard and control the development of the fluorescent lighting industry was the aggressive promotion of fluorescent lighting by an "independent" manufacturer, namely the Hygrade Sylvania Corporation, and the activities of this "independent" are the only barrier existing today to General Electric, Westinghouse, and the utilities getting absolute control of the new industry and operating it solely in conformity with their own mutual interests.

BACKGROUND

1. Position of General Electric and Westinghouse in the Lamp Industry and the Electrical Industry

For many years General Electric has possessed a firm and practically absolute domination and control over the incandescent lamp industry. Westinghouse, which manufactures both incandescent and fluorescent lamps, shares with General Electric in its domination and control of the industry.

Digitized by Google

In addition to maintaining a patent cross-licensing arrangement with Westinghouse, General Electric has given Westinghouse the right to use its lamp trade-mark "Mazda." General Electric and Westinghouse are the only two manufacturers having the right to use this trade-mark, and they are frequently and commonly referred to as the "Mazda" manufacturers.

In addition to electric lamps, General Electric manufactures and distributes a complete line of electrical apparatus, ranging from the smallest items to giant turbines and generators. Westinghouse also makes a substantially complete line of electrical apparatus. Other lamp manufacturers depend mostly on revenues from their lamp sales to remain in business.

2. Organization in the Utilities Industry

The utilities, although ordinarily independent of each other, except where grouped together in holding companies and organizations such as Electric Bond & Share Co., can and do act in concert in matters affecting their common interest. For instance, over 100 utilities belong to the Edison Electric Institute (sometimes hereinafter referred to as the E. E. I.), the operating area of which utilities collectively extends to substantially every part of the country. The E. E. I. is made up of committees and groups, composed of representatives of the member utilities, who among other things handle policies for the industry on matters coming within the purview of the committees and seek to effect these policies. The policies are determined at meetings of the E. E. I. as a whole, or they may be formulated by the particular committees themselves, on the basis of their knowledge of the desires of the industry, which frequently is derived from questionnaires sent out to each utility.

One of the most important of the committees of the E. E. I. is the lighting sales committee. This committee has over many years worked very closely with representatives of General Electric and Westinghouse in determining policies to be pursued with respect to the manufacturer, distribution, and use of lamps manufactured by the two Mazda companies and with respect to the promotion of such lamps by the utilities.

In 1940 the lighting sales committee of the E. E. I. had as its members the following:

J. E. Mueller, chairman, West Penn Power Co., Pittsburgh, Pa.
W. J. Amos, New Orleans Public Service, Inc., New Orleans, La.
C. T. Bremicker, Northern States Power Co., Minneapolis, Minn.
I. L. Illing, Wisconsin Electric Power Co., Milwaukee, Wis.
Paul Manchester, Blackstone Valley Gas & Electric Co., Pawtucket, R. I.
Howard M. Sharp, Buffalo, Niagara & Eastern Power Co., Buffalo, N. Y.
W. A. Stannard, Consumers Power Co., Grand Rapids, Mich.
M. N. Waterman, Central Hudson Gas & Electric Corporation, Poughkeepsie, N. Y.

Another large organization of utilities is the Association of Edison Illuminating Companies (sometimes hereinafter referred to as A. E. I. C.), which is composed of a large number of utility companies, the collective operating area of which extends over the United States. Like the E. E. I., the A. E. I. C. has various committees which handle particular phases of the electrical industry of importance to the member companies. The committee to which lamp matters are delegated is the lamp committee of the Association of Edison Illuminuating Companies. This committee, like the lighting sales committee of the E. E. I., has worked very closely with representatives of General Electric and Westinghouse. In 1940 the members of the lamp committee were as follows:

Alex Dow, chairman, E. J. Doyle, C. E. Groesbeck, H. P. Liversidge, John C. Parkern, R. H. Tapscoll, and Preston S. Millar, executive secretary of lamp committee and chairman of the lamp subcommittee.

Subcommittee: H. B. Gear, Clarence L. Law, Charles C. Munroe, and C. Bertram Regar.

The Electrical Testing Laboratories (sometimes hereinafter referred to as E. T. L.) is an organization owned almost entirely by public utility companies which is engaged in commercial testing work on electric lamps and other electrical apparatus. The largest users of E. T. L. services are General Electric, Westinghouse, and various utility companies and associations of such companies. For General Electric and Westinghouse, Electric Testing Laboratories test their lamps which are to be given the Mazda trade-mark to determine that such lamps meet the so-called Mazda standards. For certain utility companies and associations of utility companies the E. T. L. tests lamps, principally the

Digitized by Google

lamps of the Mazda manufacturers, and on the basis of these tests submit reports to the utility companies and associations thereof as to the characteristics, quality, and uses which may be made of the lamps tested. The principal customer of the E. T. L. in the utility field is the A. E. I. C. The president of E. T. L. is Mr. Preston S. Millar, who is also executive secretary of the lamp committee and chairman of the lamp subcommittee of the A. E. I. C.

3. General Relations Existing Between General Electric and Westinghouse, on the One Hand, and the Public Utilities on the Other Hand

For many years there have been very close and intimate connections between General Electric and Westinghouse, on the one hand, and the utilities, as a group, on the other. The basis of the relations seems to be an understanding that each side will work in the interests of the other. The utilities undertake to sell and promote Mazda lamps—and the appliances and other electrical apparatus of the Mazda manufacturers as well—and on their side the Mazda manufacturers undertake to promote their products in such a way as to add to the amount of electricity consumption. The Mazda companies also support and participate in campaigns and programs conducted by the utilities to increase use of electricity supplied by them. For example, several years ago a large number of utilities gave to their customers free renewals of lamps, the purposes being to cause the customers to use lamps of higher wattage and to keep their sockets filled, and the lamps used in these campaigns were Mazda. General Electric and Westinghouse have supplied the lamps at reduced prices to the utilities giving free renewals.

The following Westinghouse interoffice correspondence dramatically illustrates the situation confronting the American consumer in the lighting industry:

SEPTEMBER 18, 1936.

Mr. H. A. CROASDALE,
Manager, Philadelphia Office:

You will recall that when Mr. Beggs was over here several months ago because of subject's account, he suggested to Mr. Lowther that Westinghouse conduct a survey of some of their restaurants in order to save Horn & Hardart money on their consumption of electricity. This survey has been postponed from time to time due to vacations and sickness of the men who must assist us in making it and it has now been scheduled for around the 1st of October.

It has come to my attention that the Philadelphia Electric Co. have been working on this account for years to get them to increase their lighting. They have been preaching good lighting to them for so long a time that they are gradually changing the lighting in some of their restaurants and Westinghouse are getting some orders for lighting equipment.

I am afraid that we will become involved in a very embarrassing situation if we tell Horn & Hardart in our survey how they can save money by cutting down their light. Do you have any suggestions to make as to how to handle this?

W. O. JAMES.

(Exhibit 1.)

The problem presented to the Westinghouse's Philadelphia office, with respect to the Horn & Hardart survey, was brought to the attention of Mr. E. W. Beggs, assistant manager of the commercial engineering department of Westinghouse, by the following letter:

SEPTEMBER 22, 1936.

With further reference to the subject's survey, it has now come to my attention that the Philadelphia Electric Co. has been working on this account for a number of years in an endeavor to have them increase their lighting load. As a result of the Philadelphia Electric Co. preaching good lighting to them for such a long period, the subject are gradually changing their lighting equipment in some of their restaurants, and the Westinghouse Co. is securing some nice orders for lighting equipment.

In view of this, I am sure we will become unfavorably involved with our good customer, the Philadelphia Electric Co., should we suggest in our survey to the subject that they can save money by cutting down their light.

"Mr. Cunningham is the individual with whom the Philadelphia Electric Company has been dealing, and he also is the individual with whom we would make our suggestions of lower cost in lighting. Therefore, I recommend that we go no further nor make any reference in our survey regarding suggestions of lower cost. However, we would appreciate any other suggestions you might

Digitized by Google

have that would enable us to strengthen our position with this company" (exhibit 2).

In his reply, dated October 1, 1936, to the manager of the Philadelphia office, Mr. Beggs stated:

"Subject: Horn & Hardart Baking Co., Philadelphia, Pa.

"In your letter of September 22, you discuss this negotiation and in particular you recommend that we do not make any suggestions regarding reduced cost of lighting.

"I am somewhat surprised that you should discuss this because actually the last thing in the world that we would suggest in this office would be the reduction in lighting intensities or lighting levels. The key to greater business is definitely along the line of stepping up lighting levels, and it would be suicide for us to urge anything else" (exhibit 3).

One of the things which most clearly emphasizes the intimacy of the relations between General Electric and Westinghouse, and the utilities, is that substantially all of the utilities deal only with Mazda lamps—it is not just that they sell Mazda lamps but that they advertise them and advocate and promote their use in every way.

The utilities have been handling the lamps of the two Mazda companies almost exclusively for so long that one now feels a tendency to accept it as a natural state of affairs. However it has not just happened. That both interests benefit is clearly exemplified by the manner in which the two interests have worked together in order to secure and maintain control over the fluorescent lighting industry and exploit that control in accordance with their respective interests.

THE FLUORESCENT LAMP AND ITS CHARACTERISTICS

A fluorescent lamp is a device consisting essentially of a glass tube, materials possessing properties of fluorescence which are coated upon the inside walls of the tube, a mixture of mercury vapor and argon gas contained in the tube, and caps or bases which seal the tube one at each end, and through each of which is fixed an electrode.

One of the outstanding characteristics of the fluorescent lamp is that it is much more efficient than the incandescent lamp, and consequently it uses much less electricity in producing a given amount of light than the incandescent lamp and thereby enables the consumer to save on his electricity bills. Fluorescent lighting is more efficient than incandescent lighting not only because fluorescent lighting affords more lumens per watt but also because it is possible to use fluorescent lighting for direct lighting in many instances where incandescent lighting would have to be indirect.

REASONS WHY THE PUBLIC UTILITIES AND MAZDA LAMP COMPANIES HAVE UNDERTAKEN TO RETARD AND CONTROL THE DEVELOPMENT OF THE NEW ILLUMINANT

The fact that less electricity is needed in the operation of fluorescent lamps than in the operation of incandescent lamps has been the principal reason why the utility companies have desired to control the development of the fluorescent lighting industry and retard the use of fluorescent lighting. For a time after its commercial introduction the installation cost of fluorescent lighting was such that it was not cheaper for the consumer to use fluorescent lighting, but even during this time the utilities realized that fluorescent would become cheaper and this view is reflected in a report written for the member companies of the E. E. I. by three members of the E. E. I. lighting sales committee, Messrs. Sharp, Skinner, and Mueller, entitled, "Plain Talk About Fluorescent Lighting" (printed in 1939) in which it is stated:

"When the economics do change and fluorescent lighting becomes cheaper for the consumer utilities will be getting a much smaller share of the consumer's lighting dollar and only about one-half the revenue for the same amount of light. Therefore, it does not seem safe to adopt merely a policy of watchful waiting. Immediate action is needed to meet the situation" (exhibit 4).

Again, Mr. Mueller stated at a conference on fluorescent lighting held between September 30 and October 3, 1940:

"However, while fluorescent lighting will have no alarming effect on present revenues, it will have a very definite effect on lighting-revenue sales, and on utility-unit sales costs. Fluorescent is normally referred to as having about

Digitized by Google

twice the efficiency of incandescent lighting. This is true. However, in actual practice the ratio is much higher.

"Incandescent lighting has been used in recent years to a large extent in a semi-indirect or indirect manner but usually with some diffusing medium. Fluorescent, on the other hand, is usually applied in a direct or semidirect manner and frequently with no diffusing medium.

"It is when the method of utilizing the light is taken into consideration that this ratio assumes more alarming proportions. For example, when incandescent lighting is used in enclosing globes as compared to a semidirect fluorescent unit, the ratio of wattage to produce the same lighting intensity is about two to one. However, when incandescent lighting is used in a totally indirect manner as compared to direct fluorescent lighting the ratio may be as high as six to one. * * * This is why so many of the surveys made to date tend to show that incandescent installations are being replaced with about 50 percent of their wattage by fluorescent" (exhibit 5).

As a result of a conference on July 11, 1939, between Mr. Sharp and Mr. Hogue, of the Buffalo, Eastern & Niagara Power Co., and Mr. A. E. Snyder, executive sales manager of Westinghouse lamp division, and Mr. R. G. Slauer, of the commercial engineering department, Mr. Slauer wrote to Mr. Snyder that—

"Regardless of what we wish to think, most fluorescent installations of the last year have resulted in decreased load for the utility. This does not mean that saving in energy costs has always been the incentive—better lighting has as often been the most important point. Nevertheless a lessened load results.

"The average utility-lighting man sees in the rise of fluorescence a decrease in his relative importance. Here is a comparison, based on a 4-cent rate, with equal costs to the user and equivalent results. The design data are unfavorable to fluorescence—almost any other selection would emphasize the differences.

"For every dollar the user spends annually with incandescence the utility gets 80 percent; the contractor, 10 percent; the equipment suppliers, 6 percent; the lamp suppliers, 4 percent.

"For fluoresence, the dollar is divided: The utility, 44 percent; the lamp suppliers, 24 percent; the equipment suppliers, 20 percent; the contractor, 12 percent.

"In other words, to the utility, fluorescent is only one-half as important as incandescence; to the lamp suppliers it is six times as important; to the equipment manufacturers, three times as important; to the contractor, 20 percent more important" (exhibit 6).

The fluorescent lamp is an electric-discharge lamp and auxiliary apparatus is required to control the discharge. This auxiliary apparatus consists of: (1) A ballast which is a device to govern the flow of electricity, and (2) a starting switch required to facilitate the starting of the lamp.

Ballasts may be designed to operate a single lamp or to operate two lamps together. The single-lamp type of ballast in an electrical circuit introduces what is known as a power factor, this being a differential in phase relation between voltage and current. This power factor may be about 50 percent. Ballasts for two lamps also introduce a power factor, but in this instance it is near unity, being 90 or 95 percent or more. Low-power factor may, if uncorrected, require the installation of lines of greater capacity by the utility companies.

The fear that fluorescent lighting might be operated at low-power factor on their lines was the second reason for the desire of the utilities to control the development of the fluorescent-lighting industry and to retard the use of fluorescent lighting. However, after fluorescent lighting had been on the market for over a year the manager of the commercial engineering department of the lamp division of Westinghouse expressed the belief that, in view of the development of ballasts for the operation of two lamps and the promotional policies of the mazda manufacturers, there was "little justification for the anxiety expressed by the utility companies, who, for years, have permitted and encouraged the sale of all sorts of appliances with even lower power factor than our first fluorescent equipment" (exhibit 7). But the utility companies felt that by cooperation with the mazda lamp companies they might be able to demand that all fluorescent lighting be corrected for power factor and this would also have the incidental effect of making fluorescent lighting more expensive to install and thus would aid in deterring the use of fluorescent lighting generally.

On their side, General Electric and Westinghouse desired to establish and maintain control over the manufacture and sale of fluorescent lamps and equipment for their operation. At the time the fluorescent lamp was introduced commercially, General Electric and Westinghouse feared that their control of the electric-lamp industry might be destroyed by "independent" lamp manufacturers

Digitized by Google

obtaining a strong position in the fluorescent-lamp manufacturing industry. Consequently General Electric and Westinghouse wished to strengthen their cooperative relations with the utilities companies in order to insure that these companies would deal in and foster the use of Mazda fluorescent lamps to the exclusion of fluorescent lamps made by other manufacturers and thus assist General Electric and Westinghouse in dominating and obtaining and maintaining control over the fluorescent-lighting industry. Moreover, General Electric and Westinghouse wished to be assured the support of the utility companies for programs and plans which General Electric and Westinghouse were to put into effect as a part of their scheme to dominate and control the fluorescent-lighting industry.

PROGRESS OF THE COOPERATION BETWEEN THE MAZDA LAMP MANUFACTURERS AND THE PUBLIC UTILITIES

1. Negotiations and Meetings Between Officials of General Electric and Westinghouse and the Utility Companies

General Electric and Westinghouse and the public utilities early recognized that the fluorescent-lighting industry and the use of fluorescent lighting could be controlled by them to the benefit of each by concerted action.

At about the time the fluorescent lamp was announced commercially by the Mazda lamp manufacturers a meeting was called of the lamp subcommittee of the A. E. I. C. and officials of the General Electric lamp department, to be held at Nela Park, the headquarters of the General Electric lamp department. This meeting, which was held on May 27, 1938, was called "in order [for the members of the lamp subcommittee] to confer with the Mazda lamp manufacturers concerning the assimilation of fluorescent * * * lamps" (exhibits 8 and 9) .

On October 27, 1938, soon after General Electric had placed its fluorescent lamps on the market, Mr. E. E. Potter, manager of the eastern sales division of the General Electric lamp department, wrote Mr. Sharp, manager of the lighting bureau of the Buffalo, Niagara & Eastern Power Co., stating:

"I do want to tell you now, however, that all of us thoroughly believe the story we are telling of using fluorescent for plus lighting and we are making every effort from here to promote it on that basis" (exhibit 10).

Even at this time General Electric recognized that longer, larger, and higher-voltage fluorescent lamps would inevitably appear on the market and that "with these lamps, it's going to be possible to produce the same or increased foot candles [of light] at a very practical installation cost and with a very decided drop in wattage" (exhibit 11). In respect to this situation, Mr. H. F. Barnes, of the sales promotion department of the General Electric lamp department wrote other officials of the company a letter on October 28, 1938, in which he stated among other things that he was very much disturbed over the utility reaction which he was sure General Electric would have as soon as the larger fluorescent lamps were announced. He declared:

"Certainly there should be no publicity of any kind on any further development on fluorescent until we have had a chance to see where we are going with our present lamps and to formulate a very definite sales, sales promotion, and advertising program which is definitely pointed at daylight intensities of a high order for stores and factories" (exhibit 11).

On January 24, 1939, Mr. Stryker, an official of the General Electric lamp department in charge of utilities sales promotion, wrote Mr. Barnes that the problem involved in keeping "the intensities up in fluorescent installations will not be too difficult when both the utility and the Mazda lamp manufacturer are working together for this common end" (exhibit 12).

During this period there were discussions between Mr. E. F. Strong, manager of the General Electric lamp department sales division for the Buffalo, N. Y., area, and Mr. Skinner, vice president of the Buffalo, Niagara & Eastern Power Corporation, concerning the statement of policy which General Electric should issue with regard to the use of fluorescent lighting. On March 7, 1939, Mr. Skinner wrote Mr. Strong in connection with a copy of a proposed statement of policy on this subject which Mr. Strong had furnished Mr. Skinner. Mr. Skinner stated:

"I have reviewed this rather carefully with our lighting people and have come to the conclusion that, in its present form, it is not an acceptable statement of what we think the policy should be" (exhibit 13).

Mr. Skinner indicated that the statement of policy should be corrected to show that fluorescent Mazda installations would be as expensive or more expensive

Digitized by Google

than existing incandescent Mazda installations in almost every instance. He further wished to have the statement corrected to state that the "use of bare lamps should be most carefully restrained." The letter concludes "the foregoing indicate quite a substantial difference in opinion on the appropriate policy applicable to those lamps and unless the authorities in Cleveland have modified their stand as included in the printed statement of policy which you furnished me, I think the matter warrants some further discussion."

A conference of General Electric fluorescent specialists was held at the Nela Park headquarters of the lamp division of General Electric on March 28, 1939, to discuss fluorescent lighting. At this conference Mr. Boynton, manager of the eastern sales division of the lamp division of General Electric, "read a long letter from a utility executive criticizing severely our policy, in regard to fluorescent lamps." Mr. E. E. Potter, manager of the western sales division of the lamp division of General Electric, talked about the problem with the utilities, "and urged the field men to restrict promotion to plus lighting and not to advocate these lamps for general lighting to replace present incandescent lamps" (exhibit 14).

At about this time, officials of the General Electric field offices were commencing to work with officials of the various utilities operating in their particular areas. For instance, Mr. E. G. Strong, manager in the western part of New York State for the lamp department of General Electric, was working with officials of Buffalo, Niagara & Eastern Power Corporation to determine the basis on which fluorescent lighting would be promoted in their area. Mr. Strong discussed with Mr. Skinner and Mr. Sharp, of Buffalo, Niagara & Hudson, a revision of the then-current General Electric statement of policy on the use of the fluorescent lighting. Mr. Strong in a letter dated April 12, 1939, to Mr. Ward Harrison, chief engineer of the lamp division of General Electric, suggested to Mr. Harrison that published matter concerning fluorescent lamps "minimize for the present the application of daylight fluorescent lamps for other than special applications which would mean plus installations and plus business for ourselves as well as the utility companies." He further stated that he felt:

"A very positive need of going along with the utilities in our territory in such manner as to impress upon them the fact, which is true, that we are attempting to use the fluorescent product to secure lighting effects through installations which really mean additions to the use of electricity in lighting and to avoid the use of fluorescent lamps for general illumination where either our tungsten-filament lamps are replaced in present installations or where large areas are contemplated in new buildings or in the revamping of old buildings as we all know that our present tungsten filament line with the present complete line of fixtures available must still be our revenue-producing line and with the present status of auxiliary equipment, we will be in a better position with the utilities not to go too fast on large installations.

"We are working at the present time with the local Niagara Hudson representatives so that we may all think along the lines which will be most constructive for the industry as a whole and if I can secure as promptly as possible the new statement of policy of the General Electric Co. in the use of fluorescent lamps, it will be very helpful in talking with Mr. Skinner, Mr. Sharp, and others of the power company with whom we are working * * *" (exhibit 15).

In April 1939 the E. E. I. published a report entitled "Current Practice in the Promotion and Application of Fluorescent Lamps," which summarized the results of an investigation" * * * conducted by the lighting sales committee of the Edison Electric Institute by means of a questionnaire, for the purpose of obtaining a cross-section of utility opinion and fact concerning the promotion and application of the fluorescent lamp. Ninety-nine individuals responded, representing 93 utility companies, from every portion of the United States" (exhibit 16).

Following the publishing of the E. E. I. report referred to immediately above, it was decided that a conference should be held between members of the lighting sales committee of the E. E. I. and officials of the Mazda lamp manufacturers to review the fluorescent-lighting situation so as to work out a program for the promotion of fluorescent lighting which would have the approval of both the utilities in general and the Mazda lamp manufacturers (exhibit 17). On March 26, 1939, Mr. Sharp wrote Mr. Harrison stating that he felt there were three objectives that should be discussed at the proposed meeting. The first objective would be agreement on the applications of the fluorescent lamp; the second would be the cooperative participation of the promotion and publicity portions of the industry and the development of public acceptance; and third, the development and marketing of equipment necessary to carry out the engineering and promotional aspects of the new light source (exhibit 18).

Digitized by Google

The meeting which had been proposed was held on April 24 and 25, 1939, at the headquarters of the General Electric lamp department at Nela Park, Cleveland. Present were the following: J. B. Mueller, manager of commercial sales, West Penn Power Co., Pittsburgh, Pa.; H. M. Sharp, Buffalo, Niagara & Eastern Power Corporation, Buffalo, N. Y.; M. M. Waterman, lighting service bureau, Central Hudson Gas & Electric Corporation, Poughkeepsie, N. Y.; Paul Manchester, Blackstone Valley Gas & Electric Co., Pawtucket, R. I.; W. J. Amos, general sales department, New Orleans Public Service, Inc., New Orleans, La.; Norman MacDonald, E. T. L., New York City; Oscar Cleaver, Westinghouse, Bloomfield, N. J.; McKenna, Harrison, O'Day, Barnes, Burrows, Stryker, Sturrock, Boynton, and Potter of General Electric. (Minutes of the meeting, exhibit 19; draft of minutes, exhibit 20.)

This conference was referred to by the utility representatives present as a "council of war" (exhibit 21). The meeting was concerned principally with the question of the basis upon which fluorescent lighting would be promoted and with having the representatives of all interests present decide upon a program for its promotion. The utility representatives were mainly concerned with preventing fluorescent lighting from being advertised and sold to the public on the basis of being a lighting source which would enable the public to save on their electric bills. The representatives of the utility companies also sought to make sure that fluorescent lighting should be promoted with corrected power factor of the lamp.

Mr. Sharp suggested that the Mazda lamp manufacturers for the present omit the use of advertising copy to promote fluorescent lighting to be used for general illumination. Mr. Amos stated that there were many supplementary lighting applications for fluorescent lamps and that lamps should be sold only for such applications. Mr. Mueller stated that he thought that fluorescent lighting should not be recommended for the average small jewelry or drug store (exhibit 19).

In conformity with these suggestions and the wishes of the utility representatives present, it was decided that use of fluorescent lamps for general lighting would not be emphasized "until commendable equipment is available giving 50- to 100-foot candle levels" (exhibit 19).

As to power factor it was agreed at the meeting that—

"It is to the best interest of all concerned that fluorescent lighting be installed with corrected power factor at the lamp. All emphasis will be on the use of corrected circuits, that is, corrected to both flicker and power factor" (exhibit 19).

One of the principal functions of the meeting was to determine and agree upon a statement of policy which General Electric and Westinghouse should announce with regard to the uses to which fluorescent lamps were adaptable. Such a statement of policy was mutually agreed upon by the representatives of the various interests.

As a result of the conference General Electric and Westinghouse each issued statements of policy pursuant to the decision reached at the conference. The Westinghouse statement read in part:

"*We will oppose the use of fluorescent lamps to reduce wattages.*" [Italics theirs.] (Exhibit 22.)

The General Electric statement, issued on May 1, 1939, stated:

"The fluorescent Mazda lamp should not be presented as a light source which will reduce lighting costs" (exhibit 23).

According to Mr. Kewley, manager of the lamp department of General Electric, General Electric's statement of policy was "issued particularly to allay the fears of the utility companies" (exhibit 24). According to Mr. Robinson of the lamp department, the statement of policy constituted a declaration that General Electric would "play good ball with you central stations but will expect the same brand of ball from you, too" (exhibit 25).

General Electric and Westinghouse officials met with members of the technical subcommittee of the A. E. I. C. lamp committee on May 18, 1939, in New York City. At this meeting was read "the most recent statement of promotional policy issued by the manufacturers of fluorescent Mazda lamps * * * [and there were pointed out] certain changes which had been made after the issuance of an earlier statement. These changes were made by the lamp manufacturers after it had been brought to their attention by the utility representatives that the earlier statement contained grossly exaggerated claims for the new fluorescent lamp" (exhibit 26).

It was planned that the group which had gotten together at the Nela Park conference should in the future continue to meet together from time to time to

Digitized by Google

determine that the lamp companies and utility companies were each promoting fluorescent lighting on the basis decided upon at the conference. During the conference it had been "suggested by Mr. Harrison and enthusiastically seconded by Mr. Cleaver that the more or less unofficial group which had gotten together in this conference in Cleveland be continued so as to act as a liaison body between the lamp companies and the utility companies and also to check results as the new methods of promotion agreed upon at the conference developed" (exhibit 27).

Although the utility officials present at the Nela Park conference were members of the lighting sales committee of the E. E. I., these officials, in deciding with officials of the Mazda manufacturers upon a program for the promotion of fluorescent lighting, acted only on behalf of themselves and not on behalf of the E. E. I. or its lighting sales committee. However, it was planned that the program decided upon at the conference should be submitted to and approved by the E. E. I. and that the E. E. I. should inform its member companies of the program and obtain general utility support for carrying out the program in cooperation with the Mazda manufacturers. On May 2, 1939, Mr. J. E. Mueller, manager of commercial sales of the West Penn Power Co., and a member of the lighting sales committee, wrote Mr. Ward Harrison of General Electric that—

"I sensed a little feeling of disappointment on the part of a few when it was made clear that the utility men, in agreeing to the plan, were agreeing only for themselves as individuals, and not for the Edison Electric Institute or its lighting sales committee.

"I believe I speak for the utility men present when I say that we are just as anxious as the lamp companies to officially get the utility industry at large behind the development of fluorescent lighting along the sound methods of promotion agreed to at the conference. We, of course, are marking time—and I presume the lamp companies are doing the same thing—in giving the conference any publicity until the minutes are available and the utility men present are able to submit this to the lighting sales committee for approval and action. If approved, it can then be brought to the attention of the utility industry through the proper channels" (exhibit 28).

On May 11, 1939, Mr. Mueller, chairman of the E. E. I. lighting sales committee, wrote a general letter to each of the members of the committee (exhibit 28). He stated:

"Messrs. Amoss, Manchester, Sharp, Waterman, and the writer were recently invited by the two lamp companies to Nela Park to discuss the subject of fluorescent lighting. Attached are the minutes of this discussion for your information and criticism.

"The utility men present felt that the lamp companies had gone as far as they could in meeting the past objections to their methods of promoting fluorescent lighting as brought out in the report of this committee on the subject. If the methods discussed at this conference are now put in operation by the lamp companies, manufacturers, and utilities the utilities will be in a position to take advantage of this new light source and help to direct its development along sound lines.

"If the committee is in favor of the objectives as outlined, it is planned to bring them to the attention of all those people who answered the original fluorescent questionnaire and obtain their reactions. If this reaction is still favorable, publicity on these objectives and methods of promotion, in suitable form, will go out to all members of E. E. I., recommending cooperation with these methods in the development of fluorescent lighting.

"Will you please let the chairman have your reaction to these minutes, and also send a copy of your letter to Howard Sharp. This is a subject of vital interest to the entire industry, so speed of action is of prime importance at the present time. We would like to ask that all members of the committee, including those in attendance at the conference, get their reaction to this proposal in the mail by Tuesday, May 16."

Along with a copy of the above general letter, Mr. Mueller wrote Mr. H. E. Dexter, commercial manager of the Central Hudson Gas & Electric Corporation and a member of the lighting sales committee, as follows:

"As you can see from the attached general letter to the lighting sales committee in regard to the recent fluorescent-lighting conference, present plans are as follows: To obtain the approval of the committee; obtain the reaction of a representative number of utility companies, which would be those who showed interest in the subject by answering the questionnaire; and then by means of suitable publicity make known to the entire membership of E. E. I. the con-

Digitized by Google

structive changes which came as a result of the fluorescent lighting report. As part of this last piece of publicity, the committee would probably recommend that the utility industry 'get on the bandwagon,' so to speak, take advantage of this new light source, and control the development of fluorescent lighting along sound lines by actively promoting it, first in limited fields, and then in ever-widening fields, as the economics of fluorescent lighting change.

"I think that possibly one of the most important results of the conference was the fact that the lamp companies now seem inclined to take the utilities into their confidence as part of the lighting industry in the development of promotional plans, instead of 'shooting the works' first, and then letting us know about it" (exhibit 30).

With one exception, the entire lighting sales committee "endorsed the results of the conference and were in favor of the plan of action." The one exception was Mr. C. T. Bremicker, of the Northern States Power Co., who wrote (exhibit 31) Mr. Mueller on May 16 that—

"We believe that if this situation is to be corrected it involves the necessity of action on the part of the lamp company going far beyond the revised statement of policy as approved by this meeting."

Mr. Bremicker wanted a specific retraction from the General Electric Co., in which the General Electric Co. would state—

"That fluorescent lighting is not now known to be applicable for any lighting purposes except colored or atmospheric lighting and certain phases of localized lighting such as wall cases 'show cases and display niches'."

Mr. Bremicker further stated that—

"We do not believe that the utility companies should allow themselves to be hoodwinked into a cooperative program in promoting fluorescent lighting by little power factor correction salve and the vague promises of what the lamp companies are going to do at some undisclosed future date.

"We regret that we are unable to approve the committee's action in this matter and trust that we do not seem to be arbitrarily antagonistic in our posiion. We are willing and anxious to promote any improvement in lighting which is proved practical and beneficial to the public in making possible improved seeing conditions, but until we feel that such equipment is available we cannot extend our cooperation."

However, all the other members of the lighting committee approved carrying out the program decided upon at the Cleveland conference. Mr. Mueller observed that "This was the most nearly unanimous agreement we have had on this controversial subject since the conference, and I think Carl's [Mr. Bremicker's] attitude would change if he had the benefit of the background we had because of the Cleveland conference" (exhibit 32).

On May 15, Mr. Sharp, of the lighting sales committee, replied to Mr. Mueller's general letter, stating in part:

"Our first report 'Current Practice in the Promotion and Application of Fluorescent Lamps' stated that it was committee opinion that utility lighting departments should be diligent in specifying fluorescent lamps where they rightfully belong and that we felt the utilities generally would cooperate in any well-considered program for the application of these lamps. The results of the informal meeting we had at Nela Park seem to me to have a very direct bearing on that recommendation, so that I would be very much in favor of preparing another report in which we could specifically go into more detail on the following items:

1. Correct applications for fluorescent lamps as proven by experience.
2. Methods of balancing circuits so as to correct power factors and eliminate stroboscopic effect.
3. Presentation of a uniform method for cost analysis.

"On these three items, it seems that we have material which is essentially fundamental, so that it could be considered worthy of committee action, but beyond that these items are also potent as influencing local or individual promotional efforts. I also feel that elaboration of these items will be of help to the equipment manufacturers who are attempting to arrange for specifications and certification tags for equipments utilizing fluorescent tubes.

"It is apparent that the lamp manufacturers have very definitely included the utilities in their plans" (exhibit 33).

On May 22, Mr. Sharp again wrote Mr. Mueller and stated:

"I was in New York last week and had an opportunity to talk with Ernest Greenwood about the fluorescent situation. He suggested that instead of sending out either our minutes of the Cleveland meeting or a condensed report, that we send a letter to 30 or 40 of our correspondents containing only a brief outline,

Digitized by Google

such as I have set up on the attached sheet. Such a procedure would indicate that the committee is still on the job, serve to keep the utility group united, and give our committee some additional backing from the field, thereby making it harder for anybody to divide our forces. Upon receipt of the replies from the field, which as you will note we have made very easy, we can prepare a condensed report and get it out as an interim study.

"I have read with considerable interest the letter you received from Carl Bremicker. While I think he has gone off the deep end, it is that kind of field information we require. In more than one-quarter there is just a little suspicion that our committee may suddenly sell out, and that the General Electric Co. is only waiting for some indication of that before crashing through with another promotional campaign, which may be equally offensive to the majority of the utilities. Our report can allay that fear very nicely" (exhibit 34).

On May 29, 1939, Mr. Mueller wrote Mr. Sharp a letter (exhibit 32) in which he informed him of the favorable reaction to his general letter of May 11 to the members of the lighting sales committee and continued by stating that in—

"Looking back at the meeting in Cleveland, I think the lamp companies agreed to make more changes in their operation and methods of promotion than I had expected before I attended the conference. In the words of Jim Amoss, 'it was a most complete capitulation,' although he can't quite understand the reason why there was such a change from the first day to the second day. In trying to figure out why, I think it was probably due to the fact that they realized they were definitely on unsound ground the way they had been operating, and they also knew from the fluorescent lighting report that the utilities realized it and were going to do something about it, and they know that they really couldn't put across any lighting promotion without the help of the utilities. They were anxious to settle these matters with our group, because they thought that we were in the best position to get them something in return for their capitulation.

"Amplifying this, if they agreed to 'play the game square,' by getting the utilities behind fluorescent lighting, they could sell more fluorescent lamps in places where they were sound, with the aid of the utilities, than they could sell in sound and unsound places with the 'bucking' of the utilities.

"Unless our committee does something now to give them some publicity on their change of pace, and to get the utility industry as a whole interested in the promotion of fluorescent lighting along sound lines, I think they will drop us and either try to get action through some other body, or else come out with another 'to hell with utilities' campaign, and go it alone, knowing that they have quite a strong customer appeal in their efficiency and novelty story. They also realize that within a year or two at the most, the economics will change, which will make them right in the end, and in the eyes of a large number of utility people who still believe the tungsten lamp story, make bums out of the utility men who really fought for sound principles in the beginning.

"In summing this up, if the lamp companies do what they agreed to do at Cleveland, and if we want to continue to tell the lamp companies how we want to promote it, we will have to get the utility industries interested in the promotion of fluorescent lighting. * * * I think our greatest need right now is for you to prepare a draft of a report on which we can get the committee's criticism and approval * * *."

Mr. Sharp thereupon drew up a draft of a report which he entitled "Developments in Fluorescent Lighting," on the new program for promotion of fluorescent lighting and submitted copies of this draft to members of the lighting sales committee. With respect to this report, Mr. Bremicker wrote Mr. Sharp on June 15 (exhibit 35) that—

"* * * We are very happy to say that this bulletin on the whole meets with our enthusiastic approval and that many of the points, about which there appears to have been a divergence of opinion or a misunderstanding between ourselves and other members of the committee, appear to have been satisfactorily cleared up. We feel that you have done an excellent job on this bulletin, particularly in view of the fact that, as Mr. Mueller states, it was prepared in a hurry. The scope of vision and perspective of the entire fluorescent picture shown in this report is certainly one with which the entire industry should be glad to cooperate to the fullest extent."

Mr. Bremicker added:

"* * * we would like to say that the portion covering advertising is excellent, provided that the lamp companies carry out their part of the agreement. We do not say this merely to be suspicious, but because of the fact that we have just received certain publicity from both the Westinghouse Lamp Co. and the

Digitized by Google

General Electric Lamp Co., which apparently fail to live up to some of these promises."

The specific examples mentioned by Mr. Bremicker are advertisements which do not state the wattage lost because of the auxiliary unit and which do advertise fluorescent lamps for general illumination, "which we understand had been reported to the General Electric Co. as objectionable."

There was a meeting of the lighting sales committee of the E. E. I. in New York July 13, 1939. At this meeting—

"Mr. Howard Sharp submitted the next draft of the fluorescent lighting report and questionnaire based on the criticisms recently received from members of the committee. Very few additional suggestions for changes were made. On several parts of the report where it was thought the statements might be controversial or which might provide some chance for the lamp manufacturers' representatives to say 'that is not what we agreed to,' it was felt that these should be checked with the manufacturers and these points agreed upon. This was done Friday morning" (exhibit 36).

There was an additional meeting between members of the E. E. I. lighting sales committee and officials of General Electric and Westinghouse on July 14, 1939, in New York City. At this meeting "it was stated that the utility group was now at work upon a report which was to be submitted to the E. E. I. for adoption. Certain portions of the report were read by Mr. Sharp and discussed with representatives from the lamp manufacturing companies" (exhibit 37).

On or about August 1, 1939, the lighting sales committee—

"* * * brought the results of the conferences with the major lamp companies to the attention of all those utilities who answered the first fluorescent lighting questionnaire. A questionnaire also accompanied these interim notes to determine the utilities' attitude toward the plans and equipment discussed" (exhibit 4).

The questionnaire (exhibit 38) asked such questions as:

"Will the changes in policy affecting advertising and promotion be constructive and help to eliminate misconception on the part of the public; * * * Why?"

The preamble of this questionnaire reads:

"It is recognized that many of the items contained in the attached progress report are proposed changes in policy or planned developments. Consequently the answers to the following questions should be based on the assumption that all proposed changes in policy will be enforced, and that the developments will be forthcoming."

The responses of the utilities to the questionnaire were presented to the E. E. I. member companies in a report entitled "Recent Developments in Fluorescent Lighting and Recommendations for the Immediate Future" (exhibit 39). The introduction of this report reads in part:

"In the interval since the publication by the lighting sales committee of a survey entitled 'Current Practice in the Promotion and Application of Fluorescent Lamps,' dated April 1939 and hereafter referred to as the 'April report,' a number of developments have taken place, which it is believed are important for the successful application of fluorescent lamps. These developments have been thoroughly discussed individually and collectively by the representatives of the large lamp companies and various utilities. However, the full cooperation of responsible lighting interests throughout the country is essential if the anticipated benefits are to be obtained."

In the publication entitled, "Plain Talk About Fluorescent Lighting" (exhibit 4), by Messrs. Mueller, Sharp, and Skinner, announced at the annual meeting of the A. E. I. C., held January 15 to 19, 1940, the authors state that the report "Recent developments in fluorescent lighting and recommendations for the immediate future," indicates—

"* * * that utilities are almost unanimously in favor of the progress made and the planned changes in policy. However, the study also shows that a number of the utilities because of local experience, had some doubts that the lamp companies would or could carry out all the proposed changes."

The authors continue:

"Regardless of skepticism, the utilities have a real responsibility in maintaining their local leadership and in exerting coordinated pressure nationally."

In Plain Talk About Fluorescent Lighting it is also stated that—

"Immediately following the publication of the Edison Electric Institute report in March 1939 unofficial conferences were begun by utility lighting men, a representative of Electrical Testing Laboratories, on certification procedure, and representatives of the large lamp companies in an effort to reconcile the wide differences in opinion. A number of these meetings were held, one in Chicago, one in

Digitized by Google

Cleveland, and two in New York. It was evident from the start that the technical aspects of lamps and applications would have to be agreed upon before promotion and sales could progress, and in retrospect it is clear that unless these engineering phases had been given preference, the breach between manufacturers and utilities would have been widened even further. The natural conservatism of technical men was needed to retard the tremendous hurry of the promotional minds in order to provide time in which the many details with respect to equipment and application could be worked out for the customers' benefit.

"From these conferences a number of developments have taken place, some of the more important of which are as follows:

"POLICY STATEMENTS

"The large lamp companies issued statements of policy concerning the promotion of fluorescent lamps, and gave them wide publicity. While of necessity they have been in general terms they have served as a stabilizing factor."

The publication continued to outline the policies for the promotion of the fluorescent lighting decided upon by the utilities and the Mazda lamp manufacturers at their conferences.

On March 19, 1940, a meeting of the general sales committee of the E. E. I. was held, and at that meeting it was agreed that "utilities will oppose advertising of fluorescent which stresses reduced cost of electricity and minimizes better illumination" (exhibit 40).

A special session of the annual sales conference of the E. E. I. was held in Chicago on March 22, 1940, for the purpose of discussing fluorescent lighting. Present were representatives of the Mazda lamp companies, Hygrade, several future manufacturing companies, as well as representatives of various utilities. The meeting was referred to as an "industry conference on fluorescent lighting" (exhibit 41).

In early March 1940 the Mazda lamp manufacturers advised the lamp subcommittee, the lighting sales committee of the E. E. I., that it wished to hold a meeting with them at Nela Park. On March 15, 1940, Mr. Millar, chairman of the lamp subcommittee, wrote Mr. Charles Munroe, of the Detroit Edison Co., as follows:

"Your reminder of March 13 that I have not communicated concerning the agenda for our subcommittee meeting in Nela Park was unnecessary because the matter is on my mind and conscience. Crossing your letter in the mail was my circular about collecting data of exemplary fluorescent lighting installations. This, however, is incidental to other matters. I am unable to state the principal purpose of our meeting other than to say that the lamp manufacturers desire to discuss affairs with us and that I believe that the topics will be of sufficient importance to warrant our going to Nela Park" (exhibit 42).

The proposed meeting was held at Nela Park on March 27, 1940 (exhibit 43). Those attending included Messrs. Gear, Millar, Munroe, and Regar, of the subcommittee; Messrs. Kewley, Sloan, Harrison, Boynton, and Potter, of General Electric; and Messrs. Houngholm and Snyder, of Westinghouse.

At a conference of utility executives held by Westinghouse at Bloomfield, N. J., on June 17, 1940, Mr. O. P. Cleaver, commercial engineering department, Westinghouse, delivered a talk entitled, "Fluorescent Lighting: The Public Utilities New Problem Child" (exhibit 44) in which he rhetorically asked, "Can the fluorescent lamp be used as a means of raising * * * [the consumption of electricity] * * * out of the big gully?" He remarked, "That's what all of us would like to know at this state in our statistical survey." After showing that if fluorescent lighting were used only for high-intensity lighting it would add to the loads on the utilities' lines, Mr. Cleaver concluded that, "Something has to be done about this problem child of ours, before all this can happen. * * * statistics show us how bad an 'actor-upper' he is."

On July 31, 1940, General Electric informed Mr. Millar, chairman of the lamp subcommittee of the A. E. I. C. and president of E. T. I., that it would be desirable to hold another conference of representatives of the Mazda lamp manufacturers and utilities, "in order to discuss the progress that has been made and give consideration to the promotion of the higher wattage fluorescent lamp which will be made available this fall. The time and place selected for this next conference is Monday, August 26, at Nela Park" (exhibit 45). Representatives of Westinghouse were invited to attend (exhibits 46 and 47). The meeting was probably held, but we have no record of what transpired.

Digitized by Google

At the sales executive conference of the A. E. I. C. held between September 30 and October 3, 1940, at Hot Springs, Va., Mr. Mueller presented a report entitled "Today's Fluorescent Lighting Situation" (exhibit 5). At this conference there was "a great deal of discussion of the problems presented to the utility companies by the rapid development of fluorescent lighting (exhibit 48).

2. *Pursuant to the decisions made between the utilities and the Mazda lamp manufacturers at their various conferences, the Mazda lamp manufacturers have refrained from advertising that fluorescent could be used to save electricity and have attempted to prevent this fact from coming to the attention of the public*

There are numerous examples:

On May 24, 1939, Mr. Sharp, of Buffalo, Niagara, wrote Mr. Harrison that utility men had complained to him concerning a display in the General Electric Building at the New York World's Fair. This display purportedly consisted of a 20-watt fluorescent lamp and a 20-watt incandescent lamp with a foot candle meter which showed how much more light was given by the fluorescent lamp than by the incandescent lamp. A sign accompanied the display which read to the effect, "See the difference between equal wattages of fluorescent and Mazda [incandescent] lighting" and the foot candle meters evidently showed "dramatic differences" in the quantity of light. Objecting to General Electric having this display on exhibit in their building at the World's Fair, Mr. Sharp stated:

"If this demonstration is as explained to me, I think it does violate the spirit of the understanding that our group had in Cleveland. As a matter of fact, I would think it violated the fundamental concept of the lamp department that advances in the lighting art should not be at the expense of wattage but should give the customer more for the same money. I hope you can find a way to change this exhibit, so that it does not give misleading impressions to the crowd who will see it" (exhibit 49).

Mr. Harrison replied to Mr. Sharp that it had not been intended that the exhibit should demonstrate the amount of electricity which could be saved by the use of fluorescent lamps, and that the exhibit was being withdrawn (exhibits 50 and 51).

On May 20, 1940, when the General Electric Supply Corporation published a calalog listing and picturing fixtures unequipped with shielding, the lamp division objected on the grounds that "it is almost exactly what the General Electric Co. has agreed not to do and it is what the central stations intend to combat as indicated by their formal declaration of policy" (exhibit 52). The Supply Corporation justified the form of its advertising on the grounds that it was necessitated by Hygrade Sylvania competition (exhibit 53), but the lamp division persisted in its objection to picturing fixtures not equipped with shielding and urged that if it were necessary to sell nonshielded fixtures the price of such fixtures should be indicated only by note on the catalog's price schedules to the effect that if the fixtures listed were ordered without shielding their price would be so much less (exhibit 54).

General Electric does not satisfy itself with merely not itself advertising nonshielded lamp fixtures but causes other companies, whose lighting sales policies it has a part in dictating, to refrain from selling nonshielded fixtures. Thus, when Graybar Electric Co. prepared some advertising copy containing illustrations of nonshielded fixtures, and submitted such copy to General Electric for approval, the lamp department informed Graybar that it was reducing "the number of fixtures to be illustrated from the original list of 27 to approximately 18." Some of these fixtures were ruled out due to the engineering department's disapproval of bare lamp equipment. As you know, bare tube fixtures do not fit in with the standards of lighting practice which we are promoting (exhibit 55).

3. *At the conferences between General Electric and Westinghouse and the Utilities it was also decided that General Electric and Westinghouse would work to have all fluorescent lamps operate on high-power factor*

On January 11, 1940, Mr. Ward Harrison, of the General Electric lamp division, wrote that "it is true that the lamp department has promised the utilities to feature high-power factor in advertising" (exhibit 56).

Subsequently at a meeting at Boca Raton, Fla., on January 18, 1940, officials of the lamp department and officials of certain utilities came to an understand-

Digitized by Google

ing as to what should be the wording of the announcement with respect to power-factor correction which General Electric should make to the public (exhibit 57). As a result of this conference it was decided, and Messrs. Kewley and Harrison promised, that the statement would read as follows: "General Electric Mazda lamps are recommended for use only with equipment providing good power factor" (exhibit 58).

General Electric and Westinghouse have continuously in their advertisements stressed that fluorescent lamps should be used only with equipment giving high-power factor.

4. *The members of the Lamp Committee of the E. E. I. and of the Lighting Sales Committee of the A. E. I. C. and officials of various utility companies have engaged in extensive policing of the fluorescent advertising and promotional material of the Mazda manufacturers in order to make sure that they not deviate from the basis upon which it was agreed at the various conferences that fluorescent lighting should be promoted*

On December 15, 1939, Mr. J. L. McEachin, commercial sales manager of the Minnesota Power & Light Co., Duluth, Minn., wrote to Mr. G. E. Nelson, manager of the northern division of the incandescent lamp department of General Electric, complaining about General Electric advertising in the Electrical Contracting Magazine for December 1939 (exhibit 59).

On December 18, 1939, Mr. J. E. Lynch, of the Minnesota Power & Light Co., wrote to Mr. R. H. Fite, of the Electrical Bond & Share Service, Inc., as follows:

"On Friday last, we were favored with a visit from Mr. Ed Stryker, Cleveland, and Mr. George Nelson, Minneapolis, who endeavored to explain away why it is some departments of General Electric Co. can advertise untruthfully and mislead the public generally on this rather delicate subject and the lamp department has need only to send out such an individual as Mr. Stryker in the capacity of fire extinguisher and everything should be well. * * * It has been necessary to advise them that future moves are theirs and that from now on our policy may be to go along with the lamp company which is endeavoring to handle such an important matter in the proper manner" (exhibit 60).

On January 8, 1940, Mr. R. H. Fite replied to Mr. Lynch and stated:

"Apparently through some misunderstanding or lack of proper coordination between the respective divisions of the General Electric Co., the Schenectady Advertising Department [of General Electric] is still on the wrong track. We agree with you that this matter is really serious * * *" (exhibit 61).

Mr. Fite advised Mr. Lynch to continue to cooperate with General Electric in their territory. Otherwise, the lighting business of the Minnesota Power & Light Co. "might be adversely affected."

On January 3, 1940, Mr. Sharp wrote to Mr. A. L. Powell, supervising engineer, lamp department of General Electric, objecting to Mr. Powell's articles in Lightings and Lamp because Mr. Powell had stated that "there is a very definite trend toward direct lighting as an offset to the low total luminous output of fluorescent tubes" (exhibit 62).

On January 22, 1940, an official of the Carolina Power & Light Co., of Raleigh, N. C., wrote Mr. Cleaver, of the commercial engineering department of Westinghouse, a letter commenting on an advertisement of Hygrade that "fluorescent lighting for general illumination is here today." The letter inquires whether, "Your big company intends to do those things which Hygrade is scheduled to do." The letter further states:

"You, of course, realize that in many instances the wattage will be cut to one-third as fluorescent replaces incandescent installations. There is considerably more at stake this year than there was at the time the incandescent replaced the carbon [filament lamp]—so much more that we are beginning to wonder" (exhibit 63).

On July 17, 1940, a district manager of General Electric Supply Corporation, Mr. R. D. Glennie, and Mr. Booth and Mr. Sharp, of Buffalo, Niagara Electric, met and discussed the fluorescent situation. At this meeting Mr. Sharp complained about the increased sales of fluorescent lamps in such a way as to decrease the amount of electricity consumed. On July 18, 1940, in respect to this conference Mr. Glennie wrote Mr. Sharp that he believed that it was the sale of fluorescent lamps through contractors that was causing the trouble. Mr. Glennie proposed that if Mr. Sharp thought it a good idea they would have a meeting with the contractors at the end of August in order to guide their activities. He proposed that the General Electric Supply Corporation should go through its

Digitized by Google

records and get the names of the contractors who were pushing fluorescent lighting. He stated that it was to "our interest to work together because we have a reputation at stake, which we are jealously guarding, and we are endeavoring to operate at a profit. You, too, are endeavoring to keep your customers happy and you must protect your load. Therefore our problems are one and the same" (exhibit 64).

5. *The utilities assist General Electric and Westinghouse in obtaining and maintaining control over the manufacture and sale of fluorescent lamps and equipment for their operation by selling and promoting Mazda fluorescent lamps almost exclusively and by supporting the efforts of General Electric and Westinghouse to obtain and maintain control over the manufacture and sale of fluorescent lamps and equipment for their operations*

Hygrade has been very active in the fluorescent lighting industry from its inception, energetically promoting the use of fluorescent lighting, and obtaining a strong position for itself in the electric lamp industry through developing a large business in the manufacture and sale of fluorescent lamps. The Mazda lamp companies have sought to keep Hygrade down in the fluorescent lamp field because they fear that Hygrade's development in this field would weaken their control of the electric lamp industry. The utilities have worried over Hygrade's aggressive methods in promoting the use of fluorescent lighting, largely because the utilities oppose any sponsorship of fluorescent lighting which does not limit fluorescent lighting to those fields where wattages will not be reduced, but also because of their fear that it would be more difficult to control the activities of a non-Mazda company.

The utility companies have persisted in attempts to put pressure on Hygrade in order to cause Hygrade to desist from its aggressive sales method. Thus, on April 6, 1940, Mr. Bremicker, a member of the lighting sales committee of the E. E. I. and manager of the lighting sales department of the West Pennsylvania Power Co., wrote Hygrade, stating that his company did not wish to demonstrate a new model Hygrade fluorescent unit (exhibit 65). The reason for the refusal to demonstrate was stated as follows:

"An important consideration in the desirability of obtaining fluorescent equipment for demonstration purposes is the sales policy of the manufacturer of the equipment involved. It has been our policy, and we believe generally the policy of utilities throughout the country, to support and promote the sale of fluorescent equipment made by companies whose sales policies truthfully report the merits of their equipment and whose literature and advertising, and particularly that promotional material placed in the hands of their representatives, promotes the sale of fluorescent lighting in accordance with accepted fundamental lighting principles as embodied in the better light-better sight movement. It is our feeling that your sales policy and promotional material do not meet these requirements. We realize that you apparently have made a genuine effort to cooperate with utilities in the earlier stages of fluorescent lighting, particularly with respect to power factor correction, and we trust that you have a sincere desire to correct the objectionable features of your present operations. For this reason we are pointing out certain specific points which we consider objectionable and would greatly appreciate your reactions."

The specific points concern the advertisement of the statement that fluorescent lighting gives "several times more light," and the advertising of "bare" fluorescent lamp fixtures which employ no diffusing medium. The latter concludes:

"With the above facts in mind, we think you will understand why we are not interested in spending any money for Hygrade demonstration equipment until we are satisfied that your company intends to cooperate with us in selling fluorescent lighting properly designed and properly applied."

The character of the correspondence between members of the lighting sales committee of the E. E. I. concerning Hygrade's method of promoting fluorescent lighting and the attitude of the utilities toward Hygrade prompted Mr. Mueller, chairman of the lighting sales committee of the E. E. I. to send, on May 7, 1940, to the members of the committee a copy of a letter sent him on May 6, 1940, by Mr. C. E. Greenwood. Mr. Greenwood's letter reads:

"Some interesting correspondence has come across my desk on the subject of Hygrade fluorescent lighting units and I am prompted to call your attention to one important point which was brought out in Marshall Waterman's letter to you under date of April 24. He states "Obviously any preview of this kind cannot be an official matter either with respect to E. E. I. or even with respect to the

Digitized by Google

companies involved, but must remain purely a matter of personal suggestions from lighting directors to the manufacturers.

"This becomes doubly important in view of the feeling at this time that exists between Hygrade and the R. L. M. group. Mr. Lowell and one of his company representatives spent over an hour with me recently and there is a definite resentment indicated in the way they feel they are treated as compared with the so-called Mazda group.

"As I have brought out on numerous occasions, no organizational committee, nor any member of it, has any right to discuss authoritatively the policies of E. E. I. I am offering the suggestion that in writing to Hygrade the members of your committee be certain that they identify themselves with affiliation in their own company and then in any antitrust investigation or other troubles we will not find letters being brought up that might involve the institute.

"I am advising you of the situation so that you may judge your procedure accordingly" (exhibit 66).

On May 29, 1940, Hygrade, through Mr. W. P. Lowell, of its commercial engineering department, invited the members of the lighting sales committee of the E. E. I. to a conference to be held on June 11, 1940, for the purpose of discussing Hygrade's sales, and promotional policies of fluorescent lighting (exhibit 67). It is not known whether or not this conference was held, or if the conference was held, whether or not Hygrade succeeded in persuading the utility men present to adopt a less unfavorable attitude toward Hygrade.

Referring to the activities of Hygrade in the fluorescent lighting industry in his report "Today's fluorescent lighting situation" (exhibit 5), presented at the sales executives' conference of the A. E. I. C. held between September 30 and October 3, 1940, at Hot Springs, Va., Mr. J. E. Mueller stated that—

"Another consideration which has the necessary potential for developing into a major problem is the apparent realinement of forces that is taking place among the lamp bulb manufacturers.

The largest non-Mazda manufacturer (Hygrade) claims to have basic patents for the manufacture of fluorescent lamps, and does not recognize the patents held by the Mazda companies. This is at the present time in the process of being decided by the courts. This realinement of forces, together with the competitive situation which attends it, might lead to methods and activities which could disorganize the whole lighting market to the detriment of the public and he utilities who are standing on the sidelines.

"For example, apparently the non-Mazda company, with its fixture activities, is capturing a sizable portion of the market. This is claimed by them and admitted by the Mazda people. The non-Mazda concern has, of course, captured this share of the market by aggressive merchandising. This has meant a quick assembling of a direct sales force as well as the addition of large numbers of dealer and distributor salesmen. Expansion here has been so rapid that training has lagged their sales efforts, which has led to "gadget" rather than lighting selling, and the use of questionable sales methods, particularly in certain areas. Their management is aware of this situation, and is taking steps to correct it. However, here again there is a wide divergence between management and field operation.

"There are some indications that, in an effort to combat this competition, the Mazda companies are suggesting similar methods to their distribution channels. So far, any rapid expansion of old-line jobber sales forces putting on large numbers of poorly trained fluirescent lighting salesmen for direct customer selling has been limited to isolated areas. However, if this practice grows to too great an extent, and sound training and promotional methods are allowed to lag sales efforts, this can lead to a serious situation which can upset the structure for industry cooperation."

Because of Hygrade's treatment by the utilities, Mr. E. J. Poor, president of Hygrade, addressed a memorandum, dated December 13, 1940, to the Department of Justice in which he stated:

"Hygrade Sylvania Corporation for the past 2 years has been advertising nationally the fact that it is one of the foremost companies in the manufacture and sale of fluorescent lighting equipment and, in addition, through letters and contacts through salesmen, has brought this fact to the attention of all the large electric light and power companies. Hardly without exception, those companies know from attempts to interest and sell them Hygrade tungsten filament lamps during the past 10 years or more, that the quality of Hygrade products is at least equal to that of any other company and, in general, its prices are lower, representing a real saving to the purchaser.

Digitized by Google

"In spite of these facts, the large lighting and power companies such as the Detroit Edison Co. of Detroit, Mich.; Standard Gas & Electric Co., of Chicago, Ill.; Commonwealth Edison Co. of Chicago, Ill.; and a great many others, have not placed orders for either tungsten filament or fluorescent lamps with Hygrade Sylvania Corporation but have, without exception, favored the so-called Mazda lamp manufacturer whose sales represent 80 percent of the total requirements in this field.

"Companies such as Boston Edison Co., of Boston, Mass.; Central Hudson Gas & Electric Corporation, of Poughkeepsie, N. Y.; New England Power Co., of Boston, Mass.; Consolidated Edison Co., of New York; and West Penn Power Co., of Pittsburgh, Pa., and a few others who have placed with Hygrade a very small percentage of the total light and power companies' lamp business, have been well pleased with the quality and service from Hygrade on incandescent lamps and have made a worthwhile saving through their purchases" (exhibit 68).

6. *One of the principal subjects, in addition to those described in detail in this report, discussed at the meetings between the utilities and the Mazda manufacturers was the organization of manufacturers of fixtures and auxiliary equipment for fluorescent lamps into associations which would be subject to regulation by General Electric and Westinghouse and which would be used as a means of extending the control of General Electric and Westinghouse over the manufacture and sale of fluorescent lamps and which would, at the same time, be used as a means of promoting fluorescent lighting so that it would not be used as a means of decreasing consumption of electricity and would be used only with equipment providing high power factor.*

Pursuant to the conferences between the utilities and the Mazda companies, two associations were promoted to organize the manufacturers of fluorescent lighting fixtures and manufacturers of fluorescent light equipment including ballasts and starting switches. One of these associations, the Fleur-O-Lier, consists of manufacturers of lighting fixtures for "commercial" installations and the other association, the Reflector Lamp Manufacturers Institute (commonly referred to as the R. L. M.), consists of manufacturers of fixtures for industrial installations. The two Mazda lamp manufacturers, or so it is given out to the industry, prepare specifications for fixtures, ballasts, and starting switches, and it is the essence of the Fleur-O-Lier and R. L. M. programs that manufacturers desirous of participating in either or both of the programs and of attaching the Fleur-O-Lier or R. L. M. labels to his fixtures, ballasts, or starting switches, must make his product according to, and have it certified as meeting the specifications applying to it. The E. T. L. tests the fixtures, ballasts, and starting switches to determine that they meet the specifications and awards the certifications. Although it is publicly announced that the specifications are prepared by the Mazda lamp manufacturers, the specifications are in fact submitted by the Mazda lamp manufacturers to the utilities for their approval and revision before the specifications are officially furnished to E. T. L.. The specifications are prepared in accordance with the interests of the utility companies, both in that they provide that fixtures and ballasts will be power factor corrected and in that they are designed to insure that fixtures complying with them will not be used to reduce electricity consumption. No specifications were issued for portable fixtures, such as desk lamps, which might be used to reduce electricity consumption. In the interests of General Electric and Westinghouse, the Fleur-O-Lier and R. L. M. programs are employed to secure to those companies a monopoly of fluorescent lamps and control over the manufacture and sale of ballasts and starting switches. For example, General Electric and Westinghouse require fixture manufacturers in the Fleur-O-Lier and R. L. M. associations to affix to their fixtures labels, which are so worded as to induce the use in such fixtures of fluorescent lamps manufacturered by General Electric and Westinghouse.

The Mazda lamp manufacturers and utilities have promoted the Fleur-O-Lier and R. L. M. associations in order to enable them to control the manufacture, sale and use of fluorescent lamps, ballasts, and starting switches and, therefore, they have sought to compel and cause all fixture, ballasts and starting switch manufacturers, except those whose competition they wished to eliminate, to participate and join the associations. To this end both the Mazda lamp manufacturers and the utility companies have supported, promoted, and fostered the manufacture, sale and use of Fleur-O-Lier certified and R. L. M. certified fixtures, ballasts, and starting switches and have discouraged, hindered, and suppressed the sale of such equipment not having Fleur-O-Lier or R. L. M. certification. The Mazda lamp manufacturers and the utilities' efforts to this end have

Digitized by Google

been very successful: It is estimated that 85 percent of all fluorescent lighting fixtures for industrial installations are manufactured by R. L. M. manufacturers, and the Fleur-O-Lier Association now consists of about 30 manufacturers who make the majority of all fluorescent lighting fixtures for commercial installation.

The public, despite the concerted efforts of the Mazda lamp manufacturers and the utilities, has found out that fluorescent lamps can be used as a source of general illumination and that their use as such is more economical than use of incandescent lamps.

The fact that the efforts of the Mazda lamp manufacturers and utilities to stifle the development of the fluorescent lighting industry and to keep from the public the fact that fluorescent lighting can be used to save on electricity bills has not been completely successful is largely due to the activities of Hygrade in energetically promoting and publicizing fluorescent lighting. Hygrade commenced manufacturing fluorescent lamps almost as early as General Electric and Westinghouse and, despite the efforts of General Electric and Westinghouse and the utilities to prevent it, Hygrade's business in these lamps has continuously grown and developed. At the present time Hygrade is selling large quantities of fluorescent lamps which are being extensively used to illuminate defense plants and buildings being employed in our war effort. But an effort to regulate even this supply is now in the making.

General Electric has sought to restrict the number of fluorescent lamps which Hygrade should sell by causing Hygrade to sign an agreement whereby it would be licensed by General Electric to make fluorescent lamps and would be entitled to manufacture only a limited, small number of lamps based upon a quota set by General Electric. This effort failed, and because the activities of Hygrade in the fluorescent lamp industry has prevented General Electric and Westinghouse from getting control of the fluorescent lighting industry and has thwarted to some extent the efforts of General Electric and Westinghouse and the utilities to regulate the use of fluorescent lighting, General Electric has instituted suit against Hygrade under certain fluorescent lamp patents which it purchased. By this suit it is seeking to have Hygrade enjoined from continuing to manufacture lamps. If the suit succeeds, General Electric and Westinghouse and the utilities will undoubtedly be left in complete control of the fluorescent lighting industry, and will then be able to completely control the use of fluorescent lighting on the basis decided upon by General Electric and Westinghouse and the utilities.

EXHIBIT NO. 3

STATEMENT SUBMITTED BY HON. THURMAN ARNOLD REGARDING STANDARD OIL CO. AND THE DEVELOPMENT OF SYNTHETIC RUBBER

Perhaps the best criterion to use in judging the merits of S. 702 is to assume that it had been enacted and in operation prior to the present war. A good case can be made for the proposition that it was due primarily to the absence of a well-established technical organization such as is contemplated by this bill that the country finds itself in its present plight. Particularly in the field of synthetic rubber is this so. Looking back over the history of the rubber problem in the last few years, one of the most obvious shortcomings in the handling of the program is that of the absence of technical knowledge on the part of Government agencies and officials dealing with the problem.

Documents in the files of the Department of Justice, many of which have been placed on record in the various hearings before Senate committees, tell a story that is tragic as one contrasts it with what might have been. The synthetic-rubber story is largely one of the relationship of I. G. Farben, Standard Oil Co. (New Jersey) and certain other companies which negotiated with one or both of them. Briefly that story is as follows: I G. Farben developed the Buna type of synthetic rubber in the latter part of the 1920's. It made a series of agreements with Standard Oil (New Jersey) in 1929, one of which contemplated the domination by I. G. Farben of the future chemical developments sponsored by the two companies working together. A joint company for the exploitation of certain chemical processes was organized in 1930. An abortive arrangement for testing and working with the Buna rubber was made by the joint company and the General Tire & Rubber Co.

Goodrich and Goodyear were both experimenting with synthetic rubber and during the 1930's both companies made strenuous efforts to procure from I. G.

Digitized by Google

Farben and Standard an arrangement which would permit their participation in the development and exploitation of the Buna patents.

In 1938 the pressure from these companies became so strong and the threat of their going ahead independently of I. G. Farben and Standard so imminent that I. G. Farben and the Hitler government were induced to give some indication of willingness to permit exploitation of the Buna patents in this country. An official came to the United States in the fall of 1938 and under the auspices of Standard contacted all the large rubber companies. They were given to understand that the German Buna would be made available to them. In the spring of 1939 an expert was sent over to instruct the rubber companies in the processing of the German Buna and samples were sent to the various companies for making test tires. The know-how on making the synthetic rubber itself was not given to anyone outside Germany because the Hitler government prohibited it.

The thing which had caused some relaxation in the Hitler policy of not permitting any exploitation of the Buna patents in this country was an agreement made between Standard officials and I. G. Farben officials in Berlin in the spring of 1938. In order to persuade I. G. Farben to try to procure the consent of the Hitler government for exploitation here of the Buna patents Standard gave I. G. Farben and hence Germany a full disclosure of its own synthetic rubber process for making Butyl rubber and also supplied samples. On receipt of this information, I. G. Farben agreed tto do what it could do to persuade the Hitler government to relax its prohibition against exploitation outside of Germany of the Buna rubber. When consent was obtained in the fall of 1938 the official came over as previously stated. The war broke out before any further steps were taken to supply the German Buna rubber to American processors.

In September 1939, shortly after the out-break of the war, Standard and I. G. Farben officials met at the Hague. Arrangements were made for Standard to take over the exploitation of the buna and other I. G. Farben patents in United States, Great Britain, and France. By this transaction the independent development of synthetic rubber was made much more hazardous than it would have been had no such transaction taken place. If the buna patents had remained in the name of I. G. Farben the rubber companies of this country would have had little to fear in the way of harassing infringement suits. It is quite certain that the courts would not lend themselves to the suppression of the production of vital war material at the suit of patentees who were nationals of the countries we are arming against. By assigning their patents to Standard, I. G. Farben made it possible not only to attempt to avoid seizure of the patents by the Alien Property Custodian but immediately injected a threat of infringement into the picture which otherwise would not have existed. Nor was it a mere threat. In October just a few weeks before Pearl Harbor, Standard's subsidiary, Jasco, sued the Goodrich subsidiary, Hycar Chemical Co., to enjoin the latter from making synthetic rubber because of an alleged infringement of the I. G. Farben patents which had been assigned to Standard. Goodyear was notifled of the possibility of a similar suit against it. Thus a short time before Pearl Harbor the assignee of the I. G. Farben patents, which was not itself manufacturing synthetic rubber, was not in any position to manufacture large amounts of synthetic rubber for tires and similar uses was attempting to block the manufacture by American rubber companies which had for nearly a decade been attempting to participate in the synthetic rubber program.

Having made disclosure of its information concerning butyl rubber to the Germans, Standard continued working on its development with no disclosure to others in this country. Although its technical and commercial employees realized the desirability of working with a rubber company to facilitate its development the management refused to permit this and it was not until the summer of 1940, more than 2 years after the disclosure to the Germans, that arrangements were made with Firestone and United States Rubber for testing butyl rubber for tires. The tests then made were intended to determine whether reasonably satisfactory pasesnger tires could be made of butyl rubber. It was the conclusion after a few weeks of testing that a fairly satisfactory tire could be made from butyl rubber and that superior inner tubes could be made from it. And yet the first plant for producing butyl rubber on a commercial scale has been put in operation within the past month.

In June 1940, Vice President Wallace, then Secretary of Agriculture, told the agricultural subcommittee of the Senate Appropriations Committee, "The current price (of natural rubber) is perhaps 24 cents per pound; but I think with those

Digitized by Google

improved strains undoubtedly it will be possible to produce it for less than 12 cents a pound. And frankly, I do not think any of the synthetic rubbers can meet a price of 12 cents a pound." He was familiar to some extent with butyl rubber because its coinventor, W. J. Sparks, had left the employ of the Standard Oil Development Co. and was employed at the Northern Regional Research Laboratory of the Department of Agricultural at Peoria, Ill. What Mr. Wallace and possibly Mr. Sparks did not know was that butyl rubber was one type of synthetic which could be produced for less than 12 cents a pound, the rock-bottom price of crude rubber. Just 2 weeks before Mr. Wallace made his statement to the Senate committee Standard's engineers had submitted cost figures indicating a probable production cost of butyl rubber in a 300-ton-per-day plant of 6.6 cents per pound. Ten percent depreciation would add only slightly more than 1 cent per pound. A few months later on November 27, 1940, the same engineers estimated production cost of butyl in a 50-ton-per-day plant at 5.72 cents per pound, exclusive of depreciation and 7.07 cents with 10 percent depreciation.

Butyl rubber is unquestionably the cheapest of all synthetic rubbers and has already demonstrated its usefulness. One of the small number of tires which have been made from it has run 25,000 miles at speeds up to 50 miles per hour. Inner tubes made of it are superior to natural rubber tubes because practically no air is lost through the wall of the tube. For gas masks and barrage balloons it is also superior. Flotation gear such as life rafts for airplanes is inflated by releasing carbon dioxide. Butyl rubber is nearly 60 times as impermeable to carbon dioxide as is natural rubber.

From the foregoing it seems clear that the plight we are in with regard to shortage of synthetic rubber is largely due to Government agencies not having information which was known to private companies and part of which had been given to Germany.

If such an organization as the proposed Office of Scientific and Technical Mobilization had been functioning in 1940 and 1941 things might well have been different. Goodrich and Goodyear both were anxious to have a large development of synthetic rubber in this country and concerned by the restrictions which Standard was placing upon them could have gone to the Office of Scientific and Technical Mobilization with confidence that something would be done about the matter. W. J. Sparks, coinventor of butyl rubber, who had left Standard to take Government employment when the company failed to push development of butyl as he thought it should, would have had a logical agency to turn to in his advocacy of butyl rubber.

The various Government agencies such as the Office of Production Management, Office for Emergency Management, War Production Board, Rubber Reserve Company, and the Office of the Rubber Director which have dealt with the rubber problem could have looked to a trained body of Government technicians for factual information. Instead, they have been forced to get their facts from officials of private companies which are vitally concerned in the policies which will be predicated on such facts.

EXHIBIT NO. 4

STATEMENT OF WALTER R. HUTCHINSON, SPECIAL ASSISTANT TO THE ATTORNEY GENERAL, BEFORE THE SENATE COMMITTEE ON PATENTS, APRIL 20, 1942

SECTION I. INTRODUCTION

It has been proposed to examine patent abuses which have hampered the development of the plastics industry. However, the plastics industry is composed of dozens of large firms manufacturing scores of different kinds of plastics so that an adequate survey of patent abuses in this field would consume too much time to be practicable for the purposes of this inquiry. For this reason the Antitrust Division wishes to present a case history of an investigation made in one field of plastics, hoping thereby to illustrate a patent pattern which is known to be prevalent among many other types of plastics.

Before taking up the patent history of the case selected, we propose to outline very briefly the scope of the plastics industry as a whole.

It has been estimated that the total output of all plastics during 1941 was about 300,000,000 pounds representing an aggregate value of approximately $500,000,000. The industry has developed tremendously in the last 10 years and many industrial experts look to plastics not only to substitute for many critically

Digitized by Google

short metals during this war, but also to supersede metals, glass, and wood for many uses after the war.

The war effort is relying heavily on plastics for such implements of war as the following: Navy mosquito boats made of laminated phenol formaldehyde plastic, parachute flares, crash helmets for use by the Tank Corps, windbreakers, i. e. tips on shells, bayonet sheaths, gun stocks, and bayonet handles. These are merely some of the war needs for which plastics are being utilized.

Now let us consider the facts developed by the Antitrust Division's investigation into one of these plastics, namely, methyl methacrylate.

In the course of this investigation the Antitrust Division discovered there existed five corporations, two American, one English, and two German, which were linked by a series of secret cartel agreements. Before presenting the evidence of their activities, we wish to give a brief thumbnail sketch of these corporations for purposes of identification.

(1) Röhm & Haas Co., Inc., of Philadelphia, Pa. (hereinafter sometimes referred to as Philadelphia or R. & H.), a company organized under the laws of Delaware about 1917, is engaged in the manufacture of various chemicals and chemical products, including particularly acrylic resins. The history of this company dates back to the early 1900's at which time Dr. Röhm, a scientist, and Mr. Haas were partners in a chemical business in Germany. Subsequently Mr. Haas came to the United States and organized a partnership to exploit the chemical industry with products developed by Dr. Röhm in Germany. Dr. Röhm expressed interest in the acrylic resin field prior to the last war, but it was not until after that time that he applied for United States patents on his inventions. The patents which issued were licensed or assigned exclusively to Röhm & Haas Co. which was also engaged in experimentation for the purpose of promoting development in this field. Through the cooperation of the two firms Röhm & Haas Co. is probably the leading producer of acrylic plastics in this country.

(2) Resinous Products & Chemical Co., Inc., of Philadelphia, Pa., organized under the laws of Delaware in 1926 is a company engaged exlusively in manufacture of synthetic resins. The officers of this company are identical with those of the Röhm & Haas Co., and the majority interest in the capital stock is owned personally by Mr. Haas. This company holds exclusive licenses from a German and American chemical company under United States patents covering manufacture of probably the best synthetic resin used as a laminating bond in production of plywood. Plywood is being used extensively by British and German firms in production of aircraft. Production of plywood planes for use as military transports has been started by one of the largest United States aircraft producers, as a short cut to providing needed aircraft without using strategic materials.

(3) Röhm & Haas, A. G. of Darmstadt, Germany (hereinafter sometimes referred to as Darmstadt), organized under the laws of Germany, is a company engaged in manufacture of various chemicals and their products. This firm which is the outgrowth of the partnership between Dr. Röhm and Mr. Haas acquired many of the basic patents in the acrylic plastic field under which Röhm & Haas of Philadelphia was later licensed. Little information is available as to who now controls and prescribes the policy of this firm.

(4) I. G. Farbenindustrie, A. G. of Frankfurt a Main, Germany (hereinafter referred to as I. G.), was organized under the laws of Germany in 1925 as a result of a merger of the six largest chemical and dye producers of Germany. This company virtually controls the entire chemical industry in Germany. I. G. owns and controls many basic patents under which both R. & H. and du Pont have been licensed relating to the acrylic plastic field.

(5) Imperial Chemical Industries, Ltd. of London, England (hereinafter referred to as I. C. I.), a corporation organized in 1927 under the British laws, is one of the largest industrial companies in Great Britain and is the chief factor in the British chemical industry. I. C. I. owns and controls certain basic patents relating to the acrylic plastic field under which du Pont and Röhm & Haas Co., Philadelphia, are licensed.

(6) E. I. du Pont de Nemours & Co., Inc. (hereinafter referred to as du Pont) probably the largest United States corporation engaged in production of chemicals, is comprised of departments and subsidiaries, each of which retains its own identity, but is controlled by the parent company. For the purposes of subject matter involved here, especial attention has been given to activities of the ammonia and plastics departments. The ammonia depart-

Digitized by Google

ment produces the basic plastic materials which are then converted by the plastics department into manufactured articles.

SECTION II. METHACRYLATES

A. Description of methyl methacrylate cast sheeting and its orientation in the acrylic field

Methyl methacrylate is indispensable to our war program since every military airplane (with the exception of some trainer airplanes) built in the United States is equipped with cast sheets of methyl methacrylate, a glass substitute, marketed under the trade names of Plexiglas if manufactured by Röhm & Haas Co. of Philadelphia, Pa., and Lucite if made by E. I. du Pont de Nemours of Wilmington, Del. These two companies are the only manufacturers of this material in the United States. According to the 1940 annual report of Rohm & Haas Co., this corporation handles 85 percent of the aircraft trade. Plexiglas and Lucite are employed exclusively on military airplanes for cockpit enclosures, transparent bomber noses, gun turrets, landing light covers, and windshields.

Cast sheeting of methyl methacrylate has supplanted the use of glass in this field because of its superior qualities. It is less than half as heavy as glass, it is shatterproof, and possesses a permanent, colorless transparency which is superior to optical glass. Lucite and Plexiglas are thermoplastic and can be easily formed into domes and "blisters" for bombers.

There are other synthetic resins which have been used as glass substitutes in the airplane field but none of them possess the particularly advantageous properties of methyl methacrylate sheets. Sheets of cellulose acetate are used in some trainer planes and nitrocellulose sheets have been installed on some of the cheap, privately owned airplanes, but both cellulose acetate and nitrocellulose sheets discolor, warp, and craze upon exposure to sun and weather, thereby rendering their use for military purposes inadvisable. The use of laminated glass, comprised of a plurality of glass sheets bound together by a resinous material, has proved disadvantageous for military airplanes because of the extreme weight of such material. However, it is used on some commercial airplanes.

For military airplane purposes, then, there is no suitable substitute for Plexiglas and Lucite.

In addition to this vital and indispensable role played by methyl methacrylate cast sheets, this material because of its peculiar properties has had a wide range of uses in the commercial, scientific, and industrial fields. Despite its similarity to glass in appearance, methyl methacrylate sheeting can be sawed or carved like wood, can be machined, drilled, and threaded like any soft metal. Designs, figures, and letters can be reproduced on this synthetic resin by stamping, painting, or engraving. As a result, the material is utilized in medical instruments, contact optical lenses, eyeshields, safety goggles, machine-inspection windows, tableware, furniture, household decorations, marine sprayshields, display fixtures, edge-lighted signs, and jewelry. These are but some of the uses.

The form of methyl methacrylate in cast sheets is the most important from a national defense standpoint because of its aircraft role, but this synthetic resin is also manufactured in the form of rods, tubes, commercial molding powders, and denture base materials. These are the polymerized, i. e., solid, forms of methyl methacrylate used commercially.

The chemical in its monomer or liquid form is also employed to impregnate wood, cloth, paper, electrical coils, and then polymerized to a solid to act as a resinous coating.

For an understanding of the intercompany agreements which are discussed later, the orientation of methyl methacrylate to other allied synthetic resins is necessary. Methyl methacrylate is a derivative of methacrylate, which in turn is strikingly similar to the molecular structure of the acrylates. Carbon, hydrogen, and oxygen are the elements which compose all these resins; differences are achieved by the grouping of the elements. Thus, chemically, methyl methacrylate is closely allied to the acrylates, but the methacrylates, of which methyl methacrylate is a type, possess certain physical properties different from the acrylates. The acrylates are soft, sticky, semiliquids, whereas the methacrylates are harder, tougher, and less elastic than the acrylates. Colorless transparency, stability against aging, thermoplasticity, and resistance to most chemicals, are characteristic of both acrylates and methacrylates as a group. This entire grouping

Digitized by Google

of acrylates and methacrylates is often loosely referred to as the acrylic field. However, the distinction between the acrylates and methacrylates is manifest in the various intercompany agreements.

The acrylates are used in the forms of aqueous emulsions and solutions in organic solvents as flexible, permanent finishes for textiles and leather. Adhesives are also made from this synthetic resin.

The first extensive commercial production of the acrylates began in Germany in 1927 when Röhm & Haas, of Darmstadt, Germany, introduced an acrylic resin in a viscous solution, which was used as the laminating layer in shatterproof glass. This resin was marketed under the trade name of Plexigum and the laminated glass made with Plexigum as the binder was marketed under the name of Plexite. Plexigum is today manufactured by Röhm & Haas, of Philadelphia, Pa., but the volume of sales is small as compared to the volume of Plexiglas sales. In 1940 Röhm & Haas Co., Inc., sold only $197,000 worth of Plexigum as compared to sales of $1,782,000 worth of Plexiglas. The decline in the sales of Plexigum is largely attributable to the superseding of Plexigum by vinyl acetal, a cheaper and more serviceable synthetic resin. However, when the first intercompany agreements were executed, primary consideration was given to the use of acrylates and methacrylates in the making of laminated glass.

B. Cartel Agreements

Röhm & Haas, Darmstadt-Röhm & Haas, Philadelphia, agreement of 1927.—The spirit of close though informal cooperation between the German and American company, was translated into a written agreement signed in Philadelphia, on October 14, 1927, and in Darmstadt on November 14, 1927.[1]

It provided for a division of sales territories whereby Röhm & Haas, A. G., received as its territory—Europe, Africa, and Asia—without Japan, and Röhm & Haas Co., Inc., received North and South America, Central America, Australia, New Zealand, and Japan. The agreement provided, also, that in the case of products manufactured or sold at the date of this agreement, neither party would sell directly or indirectly within the territory of the other without the consent of the other party.

In the case of new products thereafter developed, the developing party was to acquaint the other with a view if possible to effecting an agreement whereby the other company would acquire the exclusive sales right within its territory. If such an agreement could not be effected, then the developing party was free to make an independent sales arrangement within the territory of the other, but was to refrain from using the firm name.

The agreement was to remain in effect up to April 30, 1937, and for a period of 5 years thereafter unless canceled prior to April 30, 1936. It was signed by Otto Haas for Röhm & Haas Co., Inc., and Otto Röhm of Röhm & Haas, A. G.

This agreement was drawn up primarily to prevent competition between Röhm & Haas, Co., Inc., and Röhm & Haas, A. G., on products used in the leather-tanning trade, but it is important in the acrylic field because it made provision for negotiations pertaining to later development products.

During the early years of the 1930's Röhm & Haas, A. G., engaged in extensive research on the methacrylates and finally developed the new product called Plexiglas.

Röhm & Haas, Darmstadt-I. G. Farben agreement.—I. G. Farben had also been actively engaged in research in the acrylic field and had received a number of German patents covering the acrylates. The correspondence of this period indicates that I. G. had achieved a dominating position in Germany in the field of the acrylates, while Darmstadt dominated the methacrylic field by means of its German patent application 76098. Sometime in 1934 Darmstadt and I. G. reached an agreement which was expressly to avoid competition. Darmstedt retained control over the methacrylates and especially over cast sheeting of methyl metal crylate, while I. G. controlled the acrylates.

I. G. Farben-Röhm & Haas, Philadelphia, agreement of 1934.—On October 30, 1934, a cross-licensing patent pool was established between I. G. Farben and Röhm & Haas, Philadelphia, on their American and Canadian patents covering the preparation and application of acrylic acid and methacrylic acid.[2] The purpose of the agreement was "to avoid * * * any patent controversies between themselves as to the territory and subject matter covered by this contract and to regulate the conditions of manufacture and sales."

[1] Exhibit 1.
[2] Exhibit 2.

Digitized by Google

The contract extended to the United States and Canada.

I. G. agreed not to use or put on the market acrylic-acid products for use in the preparation of nonsplintering glass. The right to market and use methacrylic acid products as glass substitutes (i. e., cast sheets of methyl methacrylate) and the use of acrylic and methacrylic acid for adhesives was reserved to Philadelphia.

Philadelphia in turn agreed not to use the contract products for the preparation of (1) Photographic articles, (2) celluloid-like masses and products made therefrom, (3) dyestuffs, (4) artificial rubber, (5) pharmaceutical articles, (6) abrasives.

The agreement provided for an exchange of licenses under existing patent rights, and also for an exchange of information on preparation of contract products. An agreement on future patent rights was to be made in each individual case. In case of possible future connections through other contracts, an explanation was to be given on an agreement reached by letter.

Neither party was to grant sublicenses except with the consent of the other. However, I. G. reserved the right to grant sublicenses to "friendly firms" (General Aniline Works and Standard-I. G.) under the license granted to I. G. by Philadelphia. I. G. was also free to grant sublicenses for manufacture of contract products used in preparation of artificial rubber.

It was agreed that until further notice Philadelphia alone would manufacture the contract products in the United States. Philadelphia further agreed to deliver contract products to I. G. and "friendly firms" at cost plus 10 percent.

I. G. agreed not to ship contract products into the United States or Canada, and Philadelphia agreed not to ship them outside of Canada or the United States and was to prevent its customers from doing so.

Within the scope of the subject matter and territory of the contract, both parties agreed not to attack the status of foreign and domestic patents of the other party, but on request were to assist one another. Any pending patent controversies were to be dropped.

The contract was to extend until June 13, 1950, and was signed for Röhm & Haas, Philadelphia, by Otto Haas at Ludwigshafen au Rhein.

As a result of this agreement and the Darmstadt-I. G. contract, competition in the United States market in the cast-sheet field by the enormous I. G. inerests never materialized.

Insofar as other uses of the acrylates and methacrylates were concerned, the Philadelphia company accepted the restrictions placed upon it by this agreement. On December 16, 1935, S. C. Kelton prepared an interoffice memorandum for Mr. Haas in which he said:[3]

"We already have an agreement with I. G. in which we divide the acrylic and methacrylic field between ourselves and I. G. Under the agreement with I. G. certain uses of the products are reserved to I. G. and certain ones to us. We, ourselves, no longer have the right to use the products in the field for certain purposes, * * *."

Another restrictive feature of this agreement was that which specified that neither party was to grant sublicenses to third parties without obtaining the consent of the other. Mr. Haas in discussing this feature with I. G. stated:[4]

"* * * But one thing was clearly provided, namely, that third parties should be prevented from entering into the fields and therefore the exceptions were stated in the contract. Only the "friendly firms" and acquirers of licenses as to synthetic rubber should be included in the contract * * *."

During 1936 du Pont entered into negotiations with I. G. for a license under I. G. Patent 1,933,252 relating to mixtures of vinyl chloride and methacrylates made by the emulsion polymerization process. I. G. could not license du Pont under this patent without receiving the consent of Philadelphia. Since these mixtures could be employed as widely as the pure methacrylates, Philadelphia refused to assent to such a license unless du Pont was restricted from using it in cast sheeting. Negotiations pertaining to this patent and other related patents of I. G. continued until 1939 when it appears the three companies finally agreed upon a license to du Pont restricted in the manner the Philadelphia company had demanded.

During the years following the execution of the Philadelphia-I. G. 1934 agreement the restriction placed upon the Philadelphia company that it was not to use the acrylate and methacrylate resins in any of the six fields reserved to I. G. proved to be a definite hamper to the normal development of commercial

[3] Exhibit 3.
[4] Exhibit 4.

Digitized by Google

outlets for these resins. Writing to I. G. on December 30, 1938, Mr. Bergin complained about the effect of these restrictions, saying: [5]

"To illustrate how these restrictions hamper us we should like to review for you what happened in the photographic field. Back in April 1936 we were approached by the Eastman Kodak Co. for information concerning the acrylic resins. We immediately wrote to Dr. Duisberg to inquire as to what we should do. Considerable correspondence followed and the matter was discussed when Mr. Haas was in Germany in the summer of 1936 and again when Dr. Kleber visited us later in the year. It was not until December 1936 that Dr. Duisberg told us orally that I. G. would waive all restrictions in the photographic field. From April until December we were in the position of not knowing whether we could supply Eastman and as a result, could not give them our wholehearted cooperation. The uncertainty of our position eventually discouraged Eastman and by the time we obtained your oral consent, they had lost all interest and turned to another product. Had we been able to cooperate, we are confident that some profitable business would have materialized."

Bergin also pointed out that I. G. was not exploiting many of the fields reserved to it and since Philadelphia was prevented from working them by the agreement, no one was benefiting thereby.

Negotiations aimed at a modification of this agreement continued through 1938 and 1939 finally reaching a conclusion in 1940 when a written supplementary agreement was executed.[6] It provided for a modification of the 1934 agreement as to three fields.

Photographic articles.—I. G. granted the Philadelphia company the right to deliver acrylic and methacrylic products for use in the photographic field to any interested parties in the United States and Canada with the reservation, however, that Röhm & Haas, Philadelphia, and its customers were not entitled to use existing or future patent rights of I. G. or of General Aniline and Film Corporation relating to the use of the contract products for the preparation of photographic films or articles. Röhm & Haas agreed to stop deliveries of the contract products whenever informed by I. G. that a certain customer was infringing an I. G. patent in this field.

Abrasives.—I. G. also granted Philadelphia the right to use the contract products in the field of the abrasives upon condition that Röhm & Haas observe the same restrictions as were placed on their use in the photographic field.

Celluloid-like masses.—I. G. modified the 1934 agreement so that Philadelphia was free to market in the United States and Canada the contract products for the preparation of celluloid-like masses or products made therefrom. Three patents of I. G. not in existence at the time the original contract was executed were included in this license to Röhm & Haas, Philadelhpia. There was also to be an exchange of experience in the field of celluloid-like masses.

This supplementary agreement was to expire at the same time as the principal contract.

In June 1940 there was signed another license agreement [7] by these two corporations concerning an I. G. patent covering interpolymerization products of vinyl chloride and esters of maleic acid, a newly developed synthetic resin. This agreement differed from the others inasmuch as I. G. retained the right to market the products in the United States and Canada. The Philadelphia company agreed not to sell the contract products for the manufacture of dyestuffs, pharmaceuticals, or medicinals, including dentures. The use of the contract products for the manufacturing of photographic films and abrasives was permitted to Philadelphia but Röhm & Haas and its customers were not entitled to use existing or future patent rights of I. G. and General Aniline & Film relating to the use of the contract products for the manufacture of photographic films and articles, or waterproof abrasives.

The Philadelphia company agreed to sell the contract products to the I. G. and its "friendly firms" in the United States and Canada at cost plus 10 percent so long as I. G. did not undertake to manufacture them in the United States and Canada.

Philadelphia also assented to a prohibition on exports out of the United States and Canada and agreed not to attack the validity of the I. G. patent. The agreement was to run until 1957, during which time Philadelphia agreed to pay a royalty of 5 percent of the net sales price of the contract products sold.

---

[5] Exhibit 5.
[6] Exhibit 6.
[7] Exhibit 7.

Digitized by Google

During the period in which these negotiations were conducted Chemnyco., Inc., 521 Fifth Avenue, New York City, the law firm of Hutz & Joslin, 521 Fifth Avenue, New York City, and Dr. Walter H. Duisberg, 521 Fifth Avenue, New York City, at various times acted as representatives and agents for I. G. Farben.

It is apparent that many of the provisions of the Röhm & Haas, Philadelphia, and I. G. agreements were not concerned primarily with cast sheets. However, these agreements and negotiations in the general acrylic field are important since they demonstrate the rigid and harmful patent control exerted by the German interests over the development in America of new and commercially unexplored chemical fields.

Röhm & Haas, Darmstadt-Röhm & Haas, Philadelphia agreement, 1934.—Soon after the execution of the I. G.-Philadelphia agreement in 1934 the informal understanding between Philadelphia and Darmstadt on the acrylates and methacrylates was reduced to writing. In a contract [8] signed by Otto Haas and S. C. Kelton on November 24, 1934, on behalf of Philadelphia, and by Dr. Roehm for Darmstadt on January 30, 1935, the subject matter was delineated as those processes and products developed by Philadelphia or Darmstadt for the manufacture and use of acrylic and methacrylic acids and their derivatives.

Darmstadt assigned to Philadelphia the exclusive rights in the United States and Canada and their respective territories and possessions to all United States and Canadian patents and applications pertaining to this field which were owned by Darmstadt. Philadelphia, in turn, assigned to Darmstadt exclusive rights outside of United States and Canada to all foreign patents relating to this field subject to rights granted to I. G. in the contract of October 30, 1934.

Darmstadt agreed not to ship any contract products into the United States or Canada and Philadelphia reciprocated by promising not to ship outside of the United States or Canada and also agreed to endeavor to prevent customers of Philadelphia from so doing.

It was agreed that inventions or improvements by Darmstadt in the field of the contract were to belong to Philadelphia for exclusive use in the contract territory, and Darmstadt was to have exclusive rights outside of the contract territory in any inventions or improvements made by Philadelphia in the field of the contract subject to whatever rights I. G. might have.

Darmstadt also agreed to assign to Philadelphia any Canadian or United States trade-marks or trade names which Darmstadt possessed or might possess relating to contract products.

The decision of all questions relating to United States and Canadian patents or applications was to rest entirely within the discretion of Philadelphia. Outside of Canada and the United States Darmstadt was to decide on all patent questions subject to rights granted I. G.

Philadelphia was to pay in installments $60,000 for the rights conferred on it. Subsequently Philadelphia further agreed to pay a 3-percent royalty on Plexiglas until December 31, 1953.

Philadelphia began the commercial production of Plexiglas in March 1936 and, pursuant to this agreement, Philadelphia refused all export orders on Plexiglas, referring all inquiries to Darmstadt. On March 31, 1936, D. S. Frederick, of the Philadelphia company, wrote to Darmstadt: [9]

"We have decided to leave to you the Plexiglas sales which you may develop in the Philippine Islands. As you are handling the other foreign trade on the Plexiglas, it will be much better if you also deal with the Philippine customers."

July 21, 1936, Philadelphia wrote to Darmstadt, saying: [10]

"We recently received a call from the Budd Wheel Co. asking that we send a representative to their office to interview two visitors from abroad, one from Italy and one from France, who were interested in Plexiglas * * * the Budd Wheel Co. was informed that all European Plexiglas developments were handled by Röhm & Haas, Darmstadt."

Philadelphia turned down more export orders in 1938 when it refused to sell any acrylic resins to Australia because of the restrictions imposed by the agreement with Darmstadt.[11]

In an interoffice memorandum of August 3, 1938,[12] the Philadelphia company noted that Darmstadt had given revocable permission to Philadelphia to sell replacement parts of Plexiglas for airplanes manufactured in the United States but

[8] Exhibit 8.
[9] Exhibit 9.
[10] Exhibit 10.
[11] Exhibit 11.
[12] Exhibit 12.

Digitized by Google

later exported. On these replacements Philadelphia was to pay a royalty of 10 percent instead of the usual 3-percent royalty on Plexiglas sales. Furthermore, in the case of shipments to France or Belgium a special permit was to be secured from the French licensee of Darmstadt.

On July 18, 1939, Philadelphia, having received permission from Darmstadt to quote prices on Plexiglas to Russia, reported to the German firm that if any orders were received Darmstadt would be paid a royalty of 10 percent.

With the outbreak of the European war in September 1939, Darmstadt found itself cut off from the South American and Asiatic markets by the British blockade. Accordingly, on September 14, 1939, Darmstadt sent the following letter to Philadelphia:[13]

"Present-day conditions in Europe make it impossible for us for the time being to deliver to overseas markets which have been reserved for us. We would therefore like to make the following offer to you:

"You take over sales to the following countries—and this agreement can be revoked at any time: The Middle and South American States, Japan, China, and Siam.

"For the handing over of these markets you will pay us, apart from the regular license fee, 15 percent on all sales of Plexiglas to those countries. * * *

"At the time when we will be able again to sell to the aforementioned countries you will let us have copies of all bills, price arrangements, etc., which are necessary for us in order to get back into the business again. As far as possible, abide by the prices which are known to you.

"Enclosed please find details concerning sales to the aforementioned countries. As far as possible, continue the agreements with our representatives in those countries.

"If you want to accept this offer, please cable 'M 202 agree' and we shall notify our representatives of this agreement."

There followed a detailed account of Darmstadt's export activities in the aforementioned countries stating the distributor used, the prices charged, and the extent of business operations carried on in each country.

Philadelphia did not immediately assent to this proposal because it did not feel it could sell at Darmstadt's prices, nor could it allow a 15-percent royalty on the sales.

It was finally agreed that Darmstadt would receive a royalty figured on a sliding scale depending on the thickness of the Plexiglas, the royalty to range from 3 percent up to 25 percent of the sales price. On December 26, 1939, Philadelphia wrote to Darmstadt:[14]

"* * * As we agree on the prices to be charged to your distributors, we shall make this arrangement effective immediately and we are writing to your distributors in the countries listed above. As far as possible, we shall sell through your distributors, but in some cases we may find it advisable to sell through other firms. * * * We shall keep copies of all correspondence and invoices on sales in the above-mentioned countries and shall be glad to submit these copies to you when you are ready to take over this business."

The control exerted by Darmstadt over the Philadelphia company, insofar as the world markets were concerned, is shown by the following exchange of cables in April 1940:[15]

Philadelphia cabled Darmstadt on April 18, "Have inquiries for substantial Plexiglas for Dutch East Indies. May we quote?"

Darmstadt replied April 19, "Give our consent to delivery of Plexiglas to Dutch Indies today * * *."

The next day Darmstadt wrote to Philadelphia informing it that Darmstadt had some orders from a firm in the Dutch East Indies which Darmstadt had been unable to fill because of the war, and therefore the German company requested Philadelphia to contact this Dutch firm and inform it that Philadelphia would perform the contract in lieu of Darmstadt.

Later correspondence to Darmstadt indicates that Philadelphia was not particularly anxious to enter the export market at this time because its domestic customers were taking its entire capacity and orders were booked considerably in advance of delivery dates. On April 22, 1941, Philadelphia in a letter to Mr. Nelson Rockefeller,[16] Coordinator, Council of National Defense, stated that it would not be worth while for the Philadelphia company to go to any great expense

[13] Exhibit 13.
[14] Exhibit 14.
[15] Exhibit 15.
[16] Exhibit 16.

Digitized by Google

to develop the South American trade since there was a good chance that its right to sell in South America might be cut off when the war ended, and therefore the company was perfectly willing to stop all further sales of Plexiglas and Crystalite to South America, if Mr. Nelson's department thought it advisable. The ramifications of the Philadelphia company's South American trade in other products not covered by the Darmstadt agreement are developed later.

However, it is well to note here the effect of the restrictions of the Darmstadt-Philadelphia, and I. G.-Philadelphia agreements upon the marketing of another of the acrylic products, namely, Plexigum, which is used as the intermediate layer in laminated safety glass. In these agreements Philadelphia agreed not to export Plexigum and agreed to endeavor to prevent its customers from so doing.

Inasmuch as the Philadelphia company did not manufacture sheet glass, it entered into an agreement May 23, 1935, with the American Window Glass Co.[17] whereby the latter agreed to use Plexigum exclusively in the manufacture of laminated glass. The agreement also provided that Philadelphia was to pay American Window Glass Co. one-third of the net profits from sales of Plexigum. The Philadelphia company also agreed not to sell except to certain-named customers without first consulting American Window Glass Co. as to the advisability of selling to others. Those to whom Philadelphia was free to sell were Libby Owens Ford Glass Co., Pittsburgh Plate Glass Co., American Window Glass Co., Bausch & Lomb Optical Co., and any automobile manufacturing company. It was further agreed that Philadelphia would sell Plexigum to those only who would exploit its use in the manufacture and sale of laminated glass "in a manner not inimical to the best interests of the several licensees."

Philadelphia agreed to take all reasonable efforts to prevent the importation into the United States and Canada of Plexigum and particularly by or on behalf of Darmstadt or its licensees.

American Window Glass agreed to endeavor to induce laminated-glass manufacturers to buy Plexigum from Philadelphia.

All improvements and inventions relating to the manufacture of Plexigum or method of manufacturing laminated glass were to become part of the subject matter of this agreement.

American Window Glass Co. agreed to assign to Darmstadt all of its rights outside of the United States and Canada insofar as they related to the process of making laminated glass with Plexigum.

American Window Glass Co. also agreed not to export, without the consent of Darmstadt, laminated glass made with Plexigum except when such glass was part of a finished product equipped therewith, such as automobiles or airplanes.

The contract was to last until 1951 and was signed by William L. Monro, president of American Window Glass Co., and Otto Haas, president of the Philadelphia company.

During 1935 the American Window Glass Co. sought to have the restrictions on exporting to South America lifted but this was never accomplished because both Darmstadt and I. G. Farben had to agree upon this modification of their agreements with Philadelphia through whom the American Window Glass Co. claimed. Darmstadt consented but the modification was blocked by I. G., and American Window Glass discontinued its efforts.

In 1936 the Pittsburgh Plate Glass Co. introduced into the laminated glass market a vinyl acetal resin which undersold Plexigum and proved technically superior in some respects. During the next few years Plexigum was largely displaced by this vinyl acetal resin so that at the present time Plexigum no longer retains the commercial importance it once possessed.

Imperial Chemicals Industries—du Pont agreements.—On July 1, 1929, Imperial Chemicals Industries, Ltd., of Great Britain and E. I. du Pont de Nemours executed a cross-licensing agreement[18] whereby Imperial Chemicals Industries agreed, upon request, to grant du Pont an exclusive license to make, use, and sell within North and Central America, exclusive of Canada, Newfoundland, and British possessions, but otherwise inclusive of the West Indies, enumerated products made by either present or future patents and secret inventions controlled by I. C. I., and du Pont granted Imperial Chemicals Industries a reciprocal right as to the British Empire, inclusive of Egypt, but exclusive of Canada and Newfoundland. Each agreed to grant the other a nonexclusive license within all other countries except Canada and Newfoundland, not in the specified exclusive territories.

The agreement contained an extensive list of products covering many chemical fields. Among these products were "acids, both organic and inorganic, for both

[17] Exhibit 17.
[18] Exhibit 18.

Digitized by Google

the heavy chemical industry and special industries." This provision could cover acrylic acids and later it was so interpreted by du Pont and I. C. I.

The agreement was signed by Lammont du Pont, president, and M. D. Fisher, assistant secretary, for the du Pont Co., and by H. McGowan, president and director, and R. A. Lynex, assistant secretary, for the Imperial Chemicals Industries. The term of the agreement was 10 years.

A supplemental agreement was executed on December 27, 1934,[19] between these companies which provided (1) that each party had the right to exclude from the operation of the agreement inventions and secret information relating to products for military purposes; and (2) that the licensor had the right in all cases and in all territories to sell products covered by any licensed invention.

On June 30, 1939, I. C. I. and du Pont renewed their agreement of 1929 as modified by the 1934 agreement.[20] The new agreement incorporated a few minor changes and was to remain in force until 1948.

The correspondence from the du Pont files indicates that du Pont remained out of the territory reserved exclusively to I. C. I. As soon as du Pont began commercial production of the methyl methacrylate resins in early 1939 it adopted the procedure of refusing all orders emanating from the British Empire and referring them to I. C. I.[21] In special instances where I. C. I. was not yet in commercial production on certain types of methacrylate resins, I. C. I. instructed du Pont to fill British orders until such time as I. C. I. was in a position to supply them itself. Otherwise the division of markets was followed strictly, thus indicating that the right of the licensor to sell in the licensee's exclusive territory was not exercised but merely inserted to mask illegality.

Contemporaneously to the research efforts of Philadelphia, Darmstadt and I. G., Imperial Chemicals Industries had emarked upon extensive research pertaining to the acrylic field. United States Patent 1,980,483 issued on November 13, 1934, to Rowland Hill, who assigned to Imperial Chemicals Industries. This patented as a new composition of matter the polymer of methyl methacrylate. This patent dominated the manufacture of cast sheets of methyl methacrylate, e. g., Plexiglas, since it would be an infringement of this patent for any unlicensed person to use polymerized methyl methacrylate.

Du Pont—Röhm & Haas, Philadelphia, agreement of 1936.—Pursuant to the Imperial Chemicals Industries—du Pont agreement of 1929, du Pont received the exclusive American rights under the Hill patent from Imperial Chemicals Industries. Du Pont also filed an application for a patent on the monomer of methyl methacrylate. Philadelphia filed an application for Hollander and Neher (both research chemists of the Philadelphia company) which copied the claims of the Hill patent and the du Pont application on the monomer. The Patent Office declared an interference, 70829, between these claims. The evidence indicates that Philadelphia's scientists had discovered the polymer of methyl methacrylate in June 1931, whereas Hill's priority date was November 17, 1931, but proof of the date of discovery claimed by Philadelphia was very weak. Since du Pont already possessed a patent on the polymer of methyl methacrylate, Philadelphia could not attack the validity of this patent in an interference proceeding but could seek a patent on this material for itself. This was Philadelphia's objective in this interference. Both du Pont and Philadelphia had filed applications covering the monomer of methyl methacrylate, but both apparently realized the monomer was unpatentable. No patent was subsequently issued on the monomer claims of either party.

Concerning the strength of the Hill patent as it pertained to the polymer, J. F. Bergin, the patent attorney for the Philadlphia company, asserted in various interoffice memoranda that the Hill patent was of very questionable validity and that should Philadelphia lose the interference, it could afford to disregard this patent. Later when the du Pont–Philadelphia agreement was about to be signed, Mr. Bergin changed his views and declared the Hill patent was valid.

The weakness of the Hill patent was also recognized by du Pont for in an interoffice memorandum writtten May 29, 1935, by W. R. Gawthrop to F. A. Wardenburg the writer admits the patent is of questionable validity. Furthermore, on June 19, 1935, E. G. Robinson, general manager of the organic chemicals department, wrote to F. A. Wardenburg.[22]

"If the Hill patent were strong and would give us a dominating position in the field of methyl methacrylate, we might hesitate to give up that position

[19] Exhibit 19.
[20] Exhibit 20.
[21] Exhibit 21.
[22] Exhibit 22.

Digitized by Google

* * * if, however, there is a considerable doubt as to its valadity, a settlement may be the best method of safeguarding our position. * * *"

October 31, 1935, J. M. Castle, Jr., of du Pont's patent division, mentioned in a letter to A. E. Pitcher, president of du Pont Viscoloid Co.,[23] that—

"* * * the danger that the Hill patent is invalid due to anticipation seems appreciably greater than the danger of losing the patent to Röhm & Haas in this interference."

A number of interferences, seven in all, were declared between Philadelphia and du Pont during 1935. The most important of these, except for the interference on the polymer of methyl methacrylate, concerned the use of acrylic and methacrylic acid as the intermediate layer in laminated glass. Philadelphia held the upper hand in this interference. The other interferences concerned combinations of acrylic and methacrylic acid, which apparently had little commercial importance.

Beginning in July 1935 Otto Haas entered into negotiations with du Pont officials, principally F. A. Wardenburg, general manager of the ammonia department, looking toward a settlement of these interferences. Otto Haas reported[24] on July 8, 1935, that "we (Haas and Wardenburg) shall both think the situation over, clearly keeping in mind what arrangements would be possible and suitable after the interferences and patents have been cleared up."

Otto Haas was determined that in case the interferences were settled by a cross-licensing agreement, du Pont should not receive any rights in the laminated glass field or in the acrylic acid field.

October 29, 1935, Otto Haas reporting on a conference with F. A. Wardenburg,[25] stated that in reply to Wardenburg's question as to how the companies could cooperate in the event they reached an understanding on methyl methacrylate, Haas replied:

"* * * we could think of a price agreement on the finished product, or a division of our interests. I told him we have not only our own interests at stake, but also the ones of our German house and the I. G."

It should be noted here that Philadelphia had asked permission from I. G. to settle the interferences between Philadelphia and du Pont. I. G. replying through Chemnyco on September 13, 1935, gave assent to such a settlement but recommended that a restriction on the resale of the products was highly desirable.[26]

Also at this time, I. C. I. was negotiating with Darmstadt for an agreement on methyl methacrylate cast sheeting. This agreement which is described later was signed after the execution of the du Pont-Philadelphia contract.

It is clear from the correspondence in the files of the du Pont and Philadelphia companies that Otto Haas had in mind an agreement which went far beyond settlement of the interferences. J. M. Castle, Jr., of the patent division of du Pont's legal department, in a letter of October 31, 1935, to A. E. Pitcher recounts the proposals made by Mr. Haas in a conference with Mr. Wardenburg. Referring to the methyl methacrylate field, the writer states:[27] "Mr. Haas suggested a possible commercial arrangement whereby each party would have its customers which the other would leave strictly alone."

On December 19, 1935, Mr. Haas forwarded to du Pont a tentaive rough draft of the proposed agreement which provided inter alia:[28]

"* * * it is agreed that R. & H. and du Pont will cooperate in the exploitation of the solid polymer of the methyl ester of methyl methacrylate and that the du Pont Co. will not engage in the manufacture or sale of the polymeric forms of the other esters of acrylic or methacrylic acid * * *"

The illegality of such a proposal was recognized by W. R. Gawthrop of du Pont in a memorandum to F. A. Wardenburg in which the writer argues that du Pont should not concede so much to Philadelphia and then proceeds to say:[29]

"Even if the substance of the foregoing restrictions were acceptable to us, the method proposed for setting them up could not be approved. As proposed by Mr. Haas, the agreement would be a violation of the Clayton Act. So far as we are concerned any such apportionment of rights would have to be accomplished by actual licenses, or omissions of licenses, under patents or applications, and not by an agreement not to engage in some particular line of manufacture."

---

[23] Exhibit 23.
[24] Exhibit 24.
[25] Exhibit 25.
[26] Exhibit 26.
[27] Exhibit 27.
[28] Exhibit 28.
[29] Exhibit 29.

Digitized by Google

Although du Pont's position on the wording of the agreement prevailed in the final draft, the actual effect of the agreement was that du Pont remained out of the field of laminated glass using an intermediate of acrylate, and in a broader way stayed entirely out of the acrylates as differentiated from the methacrylates. Mr. Wardenburg in a meeting with Mr. Haas as late as February 7, 1941, indicated that du Pont still resented being kept out of the acrylate field and wished this restriction removed.[30]

On March 5, 1936, the differences between Philadelphia and du Pont were finally ironed out and the agreement was signed by Otto Haas and S. C. Kelton for Philadelphia and W. F. Harrington, vice president, and E. A. Howard, assistant secretary for du Pont.[31] The interferences were to be terminated by concessions of priority in favor of the party entitled to prevail as determined by the respective attorneys after considering the evidence of priority submitted by both sides. Du Pont and Röhm & Haas, Philadelphia, granted each other nonexclusive royalty free licenses under all United States patents and future patents granted on applications in the interferences to manufacture, use and/or sell the products or inventions insofar as they related to the acrylic and methacrylic acid fields. However, du Pont received no license from Philadelphia under any patent claim to laminated glass or to polymers or interpolymers containing acrylic acid. The licenses carried no right to sublicense except that each party had the right to grant its customers purchasing contract products a sublicense to process and sell the products throughout the United States. The agreement was to remain in effect until expiration of the last patent under which a license was granted.

On the same day the contract was signed F. A. Wardenburg wrote to Otto Haas that in order to avoid any misunderstanding he wished to point out that though the preamble stated du Pont had exclusive rights in the United States as to the I. C. I. patents within the field of the agreement, the exclusive licenses to du Pont did not exclude I. C. I.'s right to sell the patented products within the United States. To this Mr. Haas replied on March 7, 1936.[32]

"Whenever in the past we have acquired foreign licenses under an exclusive license arrangement, it was understood that the seller kept out of our market. Therefore * * * I took it for granted that the exclusive rights * * * meant that the I. C. I. would stay out of the United States. * * * The value of the agreement depends a good deal on the I. C. I.'s plans and intentions in the United States. If they wish to sell here moulded articles, it is one thing. If they intend to sell moulded powders and polymers in solution, it is another."

On March 9, 1936, Otto Haas reported that F. A. Wardenburg had assured him by telephone "* * * there is not any chance at all that I. C. I. will attempt to disturb the market, either by importations or otherwise." In another telephone conversation held with Mr. Wardenburg on April 3, 1936, Mr. Haas reported that Mr. Wardenburg stated.[34]

"* * * I. C. I. reserves to itself the right to sell in the United States in emergency cases, but Mr. Wardenburg assured me that although this has been in force for many years, such an emergency has never arisen * * *."

In a letter of April 9, 1936, Mr. Wardenburg again wrote to Mr. Haas:[35]

"I can only reiterate what was stated in my letter of March 5, namely, that in our license from I. C. I. they reserve the right to sell patented articles in the licensed territory."

Mr. Haas replied on April 13 that this letter was not satisfactory because he had "responsibilities to other parties to whom I have to explain the situation and I do not see how I could do this without embarrassment."[36]

Three days later Mr. Wardenburg called on Mr. Haas, the latter making this report:[37]

"(Wardenburg) repeated over and over again that there is not the slightest possibility of the I C. I.'s coming into the American market but du Pont is afraid to write a letter to this effect because in case of an investigation of their firm by politicians, the politicians might make capital of such a statement, i. e., they might attempt to point out that the world was divided up between I. C. I. and du Pont.

[31] Exhibit 31.
[32] Exhibit 32.
[33] Exhibit 33.
[34] Exhibit 34.
[35] Exhibit 35.
[36] Exhibit 36.
[37] Exhibit 37.

Digitized by Google

"I told Mr. Wardenburg that I had implicit faith in all the assurances which they had made to me, but that for my own protection I had to have a letter from du Pont in which they can assure us, in one way or another, that the I. C. I. will not take this opportunity to come into this market. After a lengthy discussion of the different ways to accomplish this purpose, it was agreed that Mr. Wardenburg will write a letter saying that while it is true that the I. C. I. under their contract have a right to come into the American market, du Pont happens to know that the I. C. I.'s development in the methacrylic ester field has taken a direction which is quite different from the one that is being taken by du Pont and ourselves so that it will be highly improbable that the I. C. I. will attempt to come into the United States market. I told him such a letter would be satisfactory."

As a result of this discussion the following letter was received by Mr. Haas on April 17, 1936, from Mr. Wardenburg:[38]

"My attention has been called to the fact that no reply has been made to your letter of March 7 with reference to the license agreement between our two companies. As pointed out to you in our letter of March 5, I. C. I. retains the right to sell the patented products in this country. However, it happens that one of our principal men was able to visit the I. C. I. plant on a trip to Europe, which he was making in connection with another matter. It was learned that their work in developing the marketing of the materials covered in our license agreement is along quite different lines than those which seem to us to be attractive in this country. We would assume from our observations, therefore, that there is little likelihood of their exercising the right which they retain to sell the products in question in this country."

To this Mr. Haas replied on April 18, 1936, to Mr. Wardenburg, "Your letter of April 17 is quite satisfactory."[39]

This correspondence has been set forth in considerable detail because it indicates clearly, first, that the I. C. I.-du Pont agreements of 1929 and 1934 were essentially cartel arrangements providing for a definite division of world trade, second, the purpose of the du Pont-Philadelphia agreement of March 5, 1936, was more than a mere settlement of patent interferences.

The purpose of the du Pont-Philadelphia agreement is much more baldly explained in the interchange of correspondence at this time between Darmstadt and Philadelphia.

On February 22, 1936, Darmstadt voiced its fear to Philadelphia that du Pont might receive a license on the process of making Plexiglas as a result of the agreement. Darmstadt further asked:[40]

"Who has the advantage of this exchange? The party which at present or in the future has the technically most valuable inventions appears to be at a disadvantage because they will have to share their rights with the other party without compensation. Therefore, the incentive to push the development forward would be influenced, and only the party who could sell the cheapest would have any advantage. We believe that an arrangement of this type would only be justified if at the same time there were made an understanding concerning the market and price. It does not appear that there has been any discussion on these points with du Pont."

Mr. Bergin in a letter of March 6, 1936, pointed out to Darmstadt that the process for making Plexiglas was not revealed to du Pont. He stated that the essential features of the Plexiglas process are:

(1) Polymerizing in a relatively narrow mold.
(2) Uniform application of heat.
(3) Controlling the temperature during polymerization.

None of these features were disclosed in any of the patents and applications covered by the agreement. Bergin further explained to Darmstadt that the agreement did not cover future inventions.

Then on March 10, 1936, Mr. Haas answered the other question raised by Darmstadt's letter of February 22. Writing to Dr. Röhm, Mr. Haas said:[41]

"Before going into the interference situation at all I had told the du Pont executive who had made the overtures to us (Mr. F. A. Wardenburg) that it is necessary to consider what to do after we have exchanged licenses. I told them

[38] Exhibit 38.
[39] Exhibit 39.
[40] Exhibit 40.
[41] Exhibit 41.

Digitized by Google

that they would have to stay out of the laminated glass field and the acrylic-acid field, i. e., that they cannot expect any licenses from us in these two fields and that it is advisable to have an informal understanding how to act in the fields where both firms have the right to proceed. We arranged that in the case of products where we compete, we shall consult with each on prices, etc., in order to avoid destructive price cutting. A matter like this cannot be put into the contract, because it would be against the law. We have to rely on our verbal assurances and our experience with du Pont during the last 15 years has proven that they can be relied upon to live up to an arrangement of this kind.

"Please treat this confidentially."

This illuminating letter explains rather pointedly the purpose and objectives of this cross-licensing agreement. Further credence is lent to this letter by the already discussed reports found in the du Pont and Philadelphia files pertaining to the negotiations preceding the agreement.

The procedure for the disposition of the interferences between du Pont and Philadelphia was followed out in the months subsequent to the execution of the agreement. After conferences of their respective attorneys, Philadelphia conceded priority to du Pont on the methyl methacrylate case, du Pont conceded the laminated-glass case to the Philadelphia company, and the other five less important interferences were handled similarly.

I. C. I.-Darmstadt Agreement of 1936.—It is necessary at this point to interrupt the story of the du Pont and Rohm & Haas, Philadelphia, conspiracy in order to round out the picture of the international cartel on methyl methacrylate cast sheeting. As previously stated, I. C. I. was conducting negotiations with Darmstadt contemporaneously to the du Pont-Philadelphia settlement.

On October 10, 1935, Maj. A. E. Hodgkin, of I. C. I., meeting with Dr. Roehm and other officers of Darmstadt, stated that I. C. I. wished to avoid competition on methacrylic acid products. I. C. I. had not yet engaged in the actual commercial operations for manufacture of cast sheets but was interested in an exchange of patents and possibly the purchase of Darmstadt's process of making sheets. The Philadelphia company's attitude on these negotiations is illustrated by the following excerpt from a cable to Darmstadt on October 14, 1935:[42]

"* * * Suggest you intimate I. C. I. that any agreement which you will make will be conditioned upon satisfactory arrangement in United States field between their licensees and ourselves * * *."

The interrelation of the I. C. I.-Darmstadt and du Pont-Philadelphia parleys is brought out by the interchange of cables between Darmstadt and Philadelphia in late November 1935. Darmstadt cabled:[43]

"* * * I. C. I. wants Empire, Scandinavia, Holland, leaves us remaining Europe and Russia, division to cover entire methacrylate field. I. C. I. offers us £3,000 for Plexiglas process * * * I. C. I. suggests mutual simple license on methacrylate patents. Du Pont can deliver to Europe according to contract with I. C. I. but may not manufacture there * * *. We are inclined to accept I. C. I. suggestion for market division and discussion of patents and to sell Plexiglas process for £5,000. You should prevent du Pont exporting to our territory."

Philadelphia replied:[44]

"We expect coming definite understanding du Pont patent situation within 2 weeks and hope for favorable outcome provided you can hold open I. C. I. negotiations. If you conclude arrangement before, danger is that du Pont will try to bluff us out. With your negotiations pending we can always threaten du Pont with I. C. I. pressure. Utterly inadvisable you selling your process. Preferable you both exchange manufacturing experience after signing agreement. Hold Canada open to us. We are trying to prevail on du Pont not to go to Europe but can do this better if you hold open your I. C. I. negotiations until we are finished * * *."

On March 30, 1936, Mr. Haas wrote to Darmstadt his recommendations on the pending I. C. I.-Darmstadt agreement. Mr. Haas pointed out that Darmstadt and Philadelphia had a unique process for casting sheets that neither I. C. I. nor du Pont could duplicate. Du Pont's and I. C. I.'s process was to cast a block and cut the sheets from the block. However, this did not produce a sheet with as smooth a surface as that achieved by Darmstadt. Rather than have

[42] Exhibit 42.
[43] Exhibit 43.
[44] Exhibit 44.

Digitized by Google

Darmstadt sell their process for a sum, Mr. Haas believed it was better to have a broad agreement, as he expressed it:[45]

"The ideal arrangement would be one that covers not only sheets, but also moulding powders, that you divide the territories * * *, and that the arrangement includes licenses, exchanges of experience, and selling price understanding."

Most of these suggestions were incorporated in the agreement executed August 31, 1936, between I. C. I. and Darmstadt.[46]

The contract products were sheets consisting substantially of polymerized methacrylic acid. It did not include blocks, rods, film, or tubes.

The territory of the agreement included the whole world except Canada and the United States and their possessions in which I C. I. and Darmstadt were bound by prior commitments. The rest of the world was divided as follows:

Exclusive to I. C. I.—United Kingdom, British Empire and mandated territories.

Exclusive to Darmstadt—Europe (inclusive of whole of Union of Soviet Socialist Republics), less Holland, Denmark, Norway, and Sweden.

Common territory—Holland, Denmark, Norway, Sweden, and all other territories not previously mentioned.

Neither party was to manufacture sheets or sell them in the exclusive territory of the other, nor license others to do so, nor sell to third parties for export as such. The parties recognized it was not practical to attempt to control fully the exportation by third parties of fabricated goods made from sheets. They did undertake, however, to restrict exports to each other's exclusive territory of such goods when fabricated by third parties for use as a substitute for safety glass in the aircraft, motor vehicle, and protective-goggle industries. But no restriction was placed upon exports of which the contract products formed a part only or which might be required as spares or replacements for use in manufactures originating in parties' own exclusive or nonexclusive territory.

Darmstadt warranted that Philadelphia would be bound by the provisions relating to I. C. I.'s exclusive territory.

Darmstadt further agreed to demonstrate their process for sheet manufacture to I. C. I. and I. C. I. agreed not to disclose this process to any third party, nor to use this process in, or export the products of this process to United States and Canada.

The parties agreed to grant each other free nonexclusive, and nontransferable licenses to work all patents under their control relating to the cast sheet process.

Darmstadt agreed not to disclose to Philadelphia or any third party information regarding pending I. C. I. applications, and I. C. I. agreed not to disclose to du Pont or any third party information regarding pending Darmstadt applications.

If any third party should enter the market in contract products in the exclusive territory or either party the latter was to be free to act in such exclusive territory as he should deem fit in regard to such competition.

If competition should arise in nonexclusive territory, the parties were to confer to devise means whereby it might be met whether by inclusion of such third party in a modification of this agreement or otherwise.

The parties undertook not to license, instruct, or assist financially, except for their respective exclusive territories, any third party desiring to manufacture the contract products.

In nonexclusive territories the parties were to agree upon prices from time to time at which the contract products were to be sold.

Nothing in the agreement, with the exception that I. C. I. was not to disclose the cast-sheet process to du Pont, was to restrict the existing relationships and obligations of I. C. I. to du Pont which included the obligation to grant nonexclusive licenses under I. C. I. patents to du Pont if the latter so desired in territories which comprised the exclusive territories of Darmstadt.

The agreement was to remain in force for 10 years or for the duration of any of the patents whichever was longer, unless previously terminated by mutual consent.

Two features of this contract as it affected the marketing restrictions on du Pont and Philadelphia should be noted. First, the true meaning of the next to last paragraph relating to du Pont's nonexclusive right to market contract products in Europe is not clear. Du Pont correspondence interprets the provision as it is written, but a letter from Darmstadt to Philadelphia on July 16, 1936, throws an entirely different light on it. Darmstadt wrote:[47]

---

[45] Exhibit 45.
[46] Exhibit 46.
[47] Exhibit 47.

Digitized by Google

"According to information given by I. C. I. section 11 (of I. C. I.-Darmstadt agreement) is merely a matter of form in regard to du Pont. The I. C. I. remains obligated to prevent as far as possible du Pont or any other third party from entering the contractual territory and it regards it as highly improbable that du Pont will enter the European market."

The similarity of this letter to the statements made by Mr. Wardenburg to Mr. Haas concerning the understanding between du Pont and I. C. I. that I. C. I. would keep out of the American market, would indicate that the master agreement between I. C. I.-du Pont masked an illegal division of world territories.

Second, Philadelphia was acquainted with the provisions of this agreement and apparently assented to the provision whereby Darmstadt warranted Philadelphia would not enter I. C. I.'s exclusive territory, for on July 30, 1936, Mr. Haas wrote to Darmstadt:[48]

"We have studied your draft and think it satisfactory in a general way * * *. As to division of territory * * * Japan and possibly South America may become important in time and it may be worth while for you to secure exclusive rights in these territories."

Thus, through a series of bipartite agreements executed at different times there was constructed an international cartel covering products of the acrylic field, the principal thread running through these agreements being the conspiracy pertaining to cast sheets of methyl methcrylate. The investigation developed the fact that though some of the conspirators never had direct dealings with one another, an over-all division of territories was worked out, whereby Philadelphia kept out of the world markets and du Pont remained out of the British Empire except when given permission in special instances, and I. C. I., Darmstadt, and I. G. Farben, remained out of the American market.

The next development to be followed is that of the domestic conspiracy between the Philadelphia company and du Pont.

Marketing arrangements of the Röhm & Haas and du Pont companies.—The Philadelphia company began the commercial production of Plexiglas in March of 1936 but it was not until 1938 and 1939 that its marketing policy became established. Insofar as Plexiglas was concerned this company sold second- and third-grade sheeting directly to small fabricators who manufactured it into numerous commercial objects such as furniture, jewelry, tableware, etc. When the aircraft manufacturers began production of military airplanes in 1939 Röhm & Hass, Philadelphia, sold first-grade Plexiglas to them directly also. But for the aircraft factories producing commercial airplanes, Röhm & Haas entered into a distributor agreement on May 12, 1939,[49] with Air Associates, Roosevelt Field, Garden City, Long Island, N. Y., whereby the latter was given exclusive sales rights on Plexiglas in the United States to specifically enumerated aircraft manufacturers who were not makers of military planes, and not to the United States Government. It was agreed Philadelphia would sell Plexiglas to Air Associates at prices 10 percent below those quoted to the rest of the aircraft industry. It was also understood that Air Associates would not sell any competitive sheet acrylic plastic. Philadelphia informed Air Associates that they could probably not export to South America since this was Darmstadt's territory. However, Philadelphia did attempt to get Darmstadt's permission to have this restriction lifted which was accomplished only after the war began in September 1939. Canada was closed to Air Associates because Röhm & Haas in January 1939 had given Hobbs Glass, Ltd., Ontario, Canada, an exclusive license for this territory. The provisions of the contract with Hobbs were similar to the Air Associates agreement except there was no restriction on sales to military aircraft producers.

A letter of April 2, 1940, from Philadelphia to Hobbs indicates resale price maintenance:[50]

"In reply to your letter of March 28 we are pleased to advise that it will be satisfactory for you to sell Plexiglas in Canada to the marine industry under the same terms as those given in our letters of January 5, 1939, regarding the aircraft industry. We shall supply you with our Plexiglas for resale to the marine trade in Canada, our prices to you to be 10 percent below our standard selling prices, and your selling prices to the trade to be the same as our standard selling prices * * *."

[48] Exhibit 48.
[49] Exhibit 49.
[50] Exhibit 50.

Digitized by Google

On January 2, 1941, Dr. Frederick, making reference to another letter not in our files wrote to Hobbs Glass, Ltd.,[51] "In my letter of January 2, 1941, to Mr. Bernhardt, I discussed the pricing of the various types of Plexiglas in Canada * * *."

In order to facilitate forming the cast sheets into bomber noses, cockpit enclosures, etc., for the aircraft companies on the west coast, Röhm & Haas erected a small forming plant in 1941. Mr. Haas invited du Pont to enter into a joint ownership of the plant but du Pont's attorneys advised against this. Du Pont considered building its own forming plant on the Pacific coast but the executive committee turned the proposal down because they believed there was no prospect of sufficient demand on the west coast after the termination of the war. Instead du Pont gave the Swedlow Aeroplastics Corporation, of Glendale, Calif., the exclusive right to do forming for the aircraft manufacturers of the Pacific coast. Swedlow was allowed a discount of 6 percent from the prices quoted to the airplane trade. Documents in our possession indicate that du Pont retained control over Swedlow's resale prices.

In a report by Mr. Haas of March 26, 1941, he states:[52]

"Mr. A. E. Pitcher called to say they have decided to send one of their good salesmen out to the coast to keep an eye on the situation, * * *. His name is W. J. Ambersly * * *. Through Mr. Ambersly, however, they will keep in close touch with his (Swedlow's) work, and particularly they will want to know the prices he is quoting * * *."

The exclusive arrangement with Swedlow brought a protest from another fabricator on the west coast interested in forming parts for the aircraft trade. This firm, the New Plastic Corporation, of Hollywood, Calif., wired du Pont on February 28, 1941, as follows:[53]

"We understand that you are contemplating giving Swedlow Aeroplastic Corporation your fabricating and jobbing of Lucite in California stocking raw material and selling them at 6 percent under airplane prices. We have 17 men in the shop working 80 percent on airplane fabrication. We can qualify as to any airplane factory requirements regarding fabrication ability. We cannot compete with preferred fabricators such as Swedlow on the terms now allowed us. It is imperative that we be allowed the same consideration if we are to remain in the business and purchase from you. * * *"

Du Pont replied in the following vein:[54]

"Answering your telegram February 28, we have arranged to have Swedlow Aeroplastics Corporation fabricate our Lucite methyl methacrylate plastic sheeting for the airplane trade on the Pacific coast. This precludes our selling you and others for this field. We are in position, however, to sell you and others Lucite for other uses at our published market prices which is the basis of price to Swedlow on purchases for other than the airplane trade."

Other than arrangements made with Swedlow, du Pont has stated to the investigators that it has no distributors of Lucite for the aircraft trade in the United States, since it sells directly to the individual airplane manufacturers.

However, in Canada du Pont has agreed to allow Canadian Industries, Ltd., to handle all sales of Lucite. Canadian Industries, Ltd., purchases at 15 percent off list price and du Pont claims that C. I. L. established its own resale prices. C. I. L. is jointly owned by du Pont and I. C. I.

1939 agreement between du Pont and Philadelphia.—Until early 1939 du Pont employed a method of making sheets by casting a solid block of methyl methacrylate and then cutting it into thin sheets. This process was not technically comparable to the cast-sheet method employed by Philadelphia since the slicing method utilized by du Pont impaired the visual qualities of the sheets. In 1939 one of du Pont's technical experts visited the I. C. I. plant in England which made cast sheets according to the process disclosed to I. C. I. by Darmstadt in fulfillment of their 1936 agreement. Inadvertently I. C. I. disclosed this process to the du Pont representative and though du Pont subsequently assured I. C. I. it would not utilize this disclosure, soon thereafter it appears that du Pont employed the invention. In April 1939 Philadelphia received a United States patent on that particular phase of the process which had prior to 1939 been unknown to du Pont. Soon thereafter Mr. A. E. Pitcher approached Röhm & Haas, Philadelphia, and

[51] Exhibit 51.
[52] Exhibit 52.
[53] Exhibit 53.
[54] Exhibit 54.

Digitized by Google

stated that du Pont had been using the invention covered by Philadelphia's patent and desired a license under it. Mr. Haas was willing to grant du Pont a license under this patent if Philadelphia's commanding position in this field could be preserved. Therefore he offered a license with a clause limiting the production of du Pont. It was also suggested that the two companies cross-license each other under other less-important patents relating to the cast-sheet process. Du Pont assented to these suggestions and on November 17, 1939, the agreement was signed.[55]

In addition to the cross-licenses on the five process patents involved the agreement specifically limited du Pont's production to a monthly average of 26,400 square feet of salable cast sheets per month. The agreement recited that Röhm & Haas, Philadelphia, was not willing to license du Pont to make more than one-half the quantity of cast sheets Röhm & Haas was then manufacturing. It was stated, however, that if Philadelphia should substantially increase its production, then du Pont should be permitted to increase its production to one-half of Philadelphia's new output. Provision was also made that if the United States Government in the case of an emergency should request a substantial increase in the number of cast sheets that could be produced by the parties, or should I. C. I. request du Pont to supply them with substantial amounts of cast sheets, then the parties were to reconsider the limitation on du Pont. The agreement was to run until the expiration of the last patent under which a license was granted.

On October 9, 1940, du Pont acknowledged information received from Philadelphia and noted that it was now entitled to enlarge its facilities so that it could manufacture a monthly average of 35,000 square feet.

The danger inherent in such a restrictive license materialized within a year. By the end of 1940 du Pont's capacity was insufficient to meet the demands of the defense program so that it was forced to open negotiations for the lifting of the restraint.

In January 1941, with a capacity of 35,000 square feet of salable cast sheets per month, du Pont was so far behind its orders that it was unable to quote deliveries before the 1st of October 1941.[56]

Mr. Pitcher visited Mr. Haas and told him that Philadelphia could either lift the restraint or du Pont would inform the Government of the license restriction. Mr. Haas was willing to lift the restriction for the duration of the emergency if a suitable compensation could be agreed upon.

Mr. Haas suggested two alternative solutions to the problem. First, du Pont should agree at the end of the emergency to curtail its production to one-half of the Philadelphia company's production; or second, Röhm & Haas, Philadelphia, would agree to permanently lift the production restriction in return for licenses under patents controlled by du Pont covering an improved method of manufacturing the monomer of methacrylate.[57] This process is known as the "sulfuric-acid process. The investigators of the Department of Justice has been informed by Röhm & Haas officials that a license under the sulfuric-acid process would result in a saving to Philadelphia of several hundred thousands of dollars in the cost of producing monomer.

To date the negotiations between the two firms have not culminated in a settlement so far as this Department has been informed.

Analysis of prices of du Pont and Röhm, Philadelphia, on methyl methacrylate sheeting.—For the purposes of this analysis methyl methacrylate sheeting of 0.125 inch thick has been selected as the common factor since this is the generally accepted standard thickness and since it illustrates the trend for the other sizes. It should be noted, however, that the cast sheeting is manufactured in thicknesses ranging from 0.060 inch up to 0.500 inch.

In 1936, 1937, and 1938 Röhm & Haas, Philadelphia, alone was producing cast sheets in commercial quantities. It appears that Röhm & Haas did not adopt its present method of pricing until April 1937, at which time it charged $2.85 per square foot for 0.125 inch thickness, less a 10-percent discount for lots over 100 square feet; in May 1938 0.125 inch was reduced to $2.65, less 10 percent for over 100 square feet, making the quantity price $2.38 per square foot.

During 1938 du Pont was preparing to launch commercial production but did not announce prices to the trade until early 1939. On February 2, 1939, du Pont announced its price schedule which varied slightly from the Röhm & Haas prices. Du Pont priced its 0.125-inch Lucite at $3 per pound. In terms of pounds the Philadelphia price on 0.125-inch Plexiglas was $3.06. The prices du Pont set on

[55] Exhibit 55.
[56] Exhibit 56.
[57] Exhibit 57.

Digitized by Google

some of its thicknesses were slightly lower than Röhm & Haas' prices and in several cases were higher. In no case was the spread greater than $0.06 for any thickness. On February 6, 1939, Mr. Haas reported that Mr. Pitcher, of du Pont, had sent him the new price list for cast methacrylate sheets which he noted was in line with the Philadelphia prices.[58]

In May 1939 both du Pont and Röhm & Haas announced price reductions on cast sheets. The exact dates when these new prices were announced have not, as yet, been ascertained, but both du Pont and Röhm & Haas announced identical prices for all thicknesses. Both companies adopted special rates to the aircraft industry with another schedule of slightly higher prices for all other trades. The price for Lucite and Plexiglas of 0.125-inch thickness fell to $1.95 for the aircraft trade and $2.15 for other trades. It should be noted that du Pont at the time of this price change adopted the policy of quoting on the square-foot basis rather than the per pound basis as formerly.

No changes in price were effected until May 1941.

On Canadian sales there are a few documents which strongly indicate that du Pont and Röhm & Haas consulted each other on Canadian prices.

On May 13, 1941, Röhm & Haas announced a $0.25 per square foot price reduction, bringing the price on 0.125 inch down to $1.70 per square foot. This reduction was retroactive to May 1, 1941. Du Pont met this reduction with a similar revision on May 16, 1941, which was also retroactive to May 1. The new prices of both companies were identical.

It is indicative of price fixing that although du Pont's sulfuric acid process for making the methyl methacrylate monomer, which is the first stage in the production of cast sheeting, would result in a saving to Röhm & Haas of at least $130,000 a year and probably over $200,000 at present capacity, du Pont with this more economical process still has charged the same prices as Röhm & Haas. Röhm & Haas, Philadelphia, has cooperated with this department by supplying all requests for production costs, profits, and sales. Du Pont has refused access to their comparable data.

By way of summary then since May 1939, which was a few months after du Pont began production of Lucite, the prices of du Pont and Röhm & Haas have been identical on methyl methacrylate cast sheets. Together with identical prices, there has been rigid control of production.

It also should be noted that this investigation has discovered documents in the Röhm & Haas and du Pont files which unquestionably point to discussion of prices on two other forms of methyl methacrylate; namely, commercial molding powders, and cast rods. For example, on April 4, 1940, Mr. Kirsopp, of Röhm & Haas, visited the du Pont plant and reported as follows:[59]

"I saw McClellan and went over the question of their 75-cent price on solid methacrylate resins. I told him that we were putting a lot of effort into finding a market for some of these resins, and we could not afford to do it at that price, and were reluctant to do the work with the constant threat hanging over our head that after we had created a market the customers would buy du Pont resins. Mr. McClellan was, as usual, sympathetic, but his attitude was that as they are really not selling more than few hundred pounds a week he was unwilling to withdraw the prices and issue new ones. I left it with him that if at any time there was a change in the situation, if they put out additional resins of this type for use in lacquers, or if the use should give promise of expanding, they would get in touch with us and give us the opportunity of going over prices with them. This he promised to do—somewhat reluctantly."

The aspects of price fixing on the other methacrylate product; namely, denture materials, are handled separately in another part of this memorandum because there are specific agreements covering this particular product.

METHYL METHACRYLATE CAST SHEETING

CONCLUSIONS OF FACT

1. The agreement signed October 3, 1934, between I. G. Farben and Röhm & Haas, Philadelphia, constituted a pool of their United States and Canadian patents relating to the acrylates and methacrylates. The Philadelphia company agreed not to use these resins in the preparation of (1) photographic articles; (2) celluloid-like masses and products made therefrom; (3) dyestuffs; (4) artificial rubber; (5) pharmaceuticals; (6) abrasives.

[58] Exhibit 58.
[59] Exhibit 59.

Digitized by Google

I. G. Farben agreed not to market within the United States and Canada acrylic and methacrylic products for use in preparation of nonsplintering glass. Also the use of methacrylates as glass substitutes (e. g., cast sheets of methyl methacrylate) and of acrylates and methacrylates for adhesives were reserved to Philadelphia.

In May 1940 the agreement was modified so that the Philadelphia company could utilize the acrylates and methacrylates for photographic articles, abrasives, and celluloid-like masses. The restriction remained on the Philadelphia company as to their use in dyestuffs, artificial rubber, and pharmaceuticals.

2. The agreement between Röhm & Haas, Philadelphia, and Röhm & Haas, Darmstadt, signed in 1927, is relevant to the acrylic field since it provided that in case of later developed products the developing company was to acquaint the other party with a view of effecting an agreement whereby the other company would acquire the exclusive sales right within its territory.

3. The agreement of January 30, 1935, between Röhm & Haas, Darmstadt, and Röhm & Haas, Philadelphia, created a pool of their present and future United States patents, Canadian, and other foreign patents relating to the acrylates and methacrylates. The Philadelphia company received the United States and Canada as its exclusive markets and the rest of the world was reserved to Darmstadt. Pursuant to this agreement the Philadelphia company received Darmstradt's patents relating to the process of manufacturing Plexiglas.

4. The agreement executed by I. C. I. and du Pont in 1929, modified in 1934, and renewed in 1939, provided for cross-licenses on United States and foreign patents relating to numerous chemicals, including methyl methacrylate. North and Central America, exclusive of Canada and Newfoundland, were reserved to du Pont as its exclusive territory; the British Empire except for Canada was I. C. I.'s exclusive territory; and the remaining territory was open to both firms. By the 1934 modification the licensor retained the right to sell in the exclusive territory of the licensee but this right was never exercised.

5. The interference settlement made by du Pont and the Philadelphia company in 1936 was a cross-licensing agreement designed to avert litigation between these companies as to the validity of the patents and applications contained in the interferences. Documents written, both before and after the signing of the agreement, by the president of the Philadelphia company state that as to methyl methacrylate products the two coompanies agreed to consult each other on prices.

6. The agreement of 1939 between du Pont and Röhm & Haas, Philadelphia, provided for cross-licenses on process patents used in the manufacture of methyl methacrylate cast sheeting whereby the cast sheet production of the du Pont was limited to a certain monthly average, equaling one-half that of the Philadelphia company. As a result of this limitation, du Pont failed to meet the military demands for cast sheets during 1941.

7. Identical prices on methyl methacrylate cast sheeting have been charged since May 1939 by the Philadelphia company and du Pont as a result of their previous negotiations.

8. Cast sheets of methyl methacrylate and other methacrylic and acrylic products referred to in the aforesaid agreements have been sold and transported in interstate and foreign commerce.

SECTION III

Röhm & Haas, Philadelphia—du Pont Activities in Denture Field

Methyl methacrylate is today the basic material used in the majority of denture plates. This material has in the last 4 years largely superseded vulcanized rubber and other denture materials because of its lightness, strength, and adaptability to pigmentation.

In 1936 Vernon-Benshoff Co., of Pittsburgh, Pa., a dental supplies manufacturer, approached Röhm & Haas, Philadelphia, to inquire into the possibility of utilizing methyl methacrylate in the denture field. Extensive experimentation was carried on during 1936, 1937, and early 1938 by the Vernon-Benshoff Co. and Röhm & Haas which resulted in a formulation of methyl methacrylate suitable for the denture trade. Röhm & Haas sold methyl methacrylate polymer (the powder) and monomer (the liquid) to the Vernon-Benshoff Co., which added a pigment to the polymer to reproduce the natural gum color, mixed the polymer and monomer, thereby achieving a plastic material about the consistency of chewing gum. Vernon-Benshoff cut this gummy substance into a blank which was

Digitized by Google

packaged and sold to the dentist who in turn cut the blank into strips and molded them in an ordinary plaster mold.

In February 1938 Vernon-Benshoff was prepared to enter into commercial production of these blanks and so inquired of Röhm & Haas as to the existence of any controlling patents. As a result of the 1936 interference settlement between Röhm & Haas, Philadelphia, and du Pont, Röhm & Haas possessed a license under the Hill patent from du Pont which enabled it to license its customers to process the polymer or methyl methacrylate.

Du Pont owned the Tidd patent, No. 2,013,295, covering dentures made from polymeric methyl methacrylate, which had not been included in the 1936 settlement. However, it was the opinion of both Röhm & Haas and Vernon-Benshoff that the Tidd patent could be ignored as it covered merely the substitution of methyl methacrylate in place of other materials used in molding dentures. Furthermore, so long as the Tidd patent was du Pont's only patent in this field, du Pont made no effort to enforce it against Röhm & Haas, saving stated to Röhm & Haas that it had no objection to the Philadelphia company's use of acrylic resins in dentures so long as no third firm entered the field.

As a result, Vernon-Benshoff proceeded to market the plastic blanks and met with considerable success. The success of Vernon-Benshoff attracted other dental supply manufacturers to this product and sometime during 1938 the Detroit Dental Co. and several other houses began marketing methyl methacrylate dentures in a different form, i. e., Detroit Dental purchased the powder and liquid and then sold it in separate containers to the trade, leaving the mixing to the laboratories or dentists. This method of marketing met with the approval of the dental profession since it proved more economical to the dentist, who could use only as much material as the particular denture plate required. On the other hand, the plastic blank had a rather short "shelf life," i. e., had a tendency to dry out.

During the period of developmental work on methacrylate dentures, du Pont was considering marketing a methyl methacrylate denture made by the injection molding process which had been evolved by I. C. I. This process necessitated expensive and cumbersome injection molding machines and resulted in a denture inferior to that marketed by Vernon-Benshoff and Detroit Dental.

Du Pont became interested in the commercial success achieved by these houses. On June 7, 1938, United States Patent No. 2,120,006 issued to Strain, of the du Pont Co. This was both a product and process patent. The plastic blank achieved by mixing monomer and polymer of methyl methacrylate was patented and also there was covered the method of molding methacrylic resins by mixing the monomer and polymer. The Strain invention was a general molding patent making no particular reference to dentures. The process patented, however, covered the one used by the dental houses. Du Pont had not foreseen the possibilities of the Strain patent in the denture field but upon observing the success achieved by using this process in the dental field decided to monopolize the market. Accordingly, in May 1938 du Pont informed Vernon-Benshoff and Detroit Dental they were infringing du Pont's Tidd and Strain patents and ordered them to desist their activities.

Vernon-Benshoff approached du Pont in May 1938, apparently to attempt to become du Pont's distributor. Du Pont already had agreed to use L. D. Caulk Co., of Milford, Del., as its distributor but did not flatly refuse to consider Vernon-Benshoff. Mr. Vernon suggested an arrangement between Caulk and his own company whereby territory could be divided and sales and promotion work carried on by both companies. The pricing of dentures was also discussed by du Pont and Vernon-Benshoff.

Röhm & Haas was naturally concerned about the issuance of the Strain patent. There had been one of the Röhm & Haas applications in the 1936 interference settlement with du Pont which disclosed the basic concept but not the specific details of the Strain patent. If the 1936 agreement was liberally construed Philadelphia was automatically entitled to a license under the Strain patent, but if a narrow interpretation was adopted then Röhm & Haas was not so entitled.

Du Pont and Philadelphia argued this point but apparently never settled the issue of interpretation. Eventually it was decided that du Pont would license Philadelphia in return for certain considerations from Röhm & Haas. The first was a license from Röhm & Haas under its Chalmers patent relating to another of the methacrylic resins, and second, a tacit understanding that Röhm & Haas would not object to du Pont's receiving a license from I. G. Farben under the Fikentscher patent relating to a mixture of methacrylic acid and styrene. The latter patent was one of those contained in the I. G., Röhm & Haas, Philadelphia,

Digitized by Google

agreement of 1934 whereby Röhm & Haas received the exclusive rights in the United States, thus necessitating Röhm & Haas' consent to any license issued by I. G. to du Pont. At this time, the Vernon-Benshoff Co. repeatedly urged Röhm & Haas to reach an agreement with du Pont whereby Vernon-Benshoff Co. and Caulk Co. would be the exclusive distributors. Mr. Haas disagreed with Vernon-Benshoff and made an objection to du Pont that he did not wish to be limited to one distributor because he believed there was less likelihood of being accused of monopolizing the denture field and, furthermore, he wished wider distribution.

Du Pont finally consented to allow Philadelphia two distributors upon condition that methyl methacrylate be sold to the dental profession in plastic blanks only. The powder and liquid packages such as Detroit Dental Co. and other small houses marketed were to be withdrawn from the market. Du Pont was adamant upon this withdrawal of unmixed powder and liquid combinations because it was believed to be the only practical way of controlling the market.

While negotiations between Philadelphia and du Pont were being conducted, certain interoffice reports were made by W. W. Perry, sales manager of plastics department, to A. E. Pitcher, general manager of the plastics department of du Pont, to apprise him of the potentialities of the denture market.

Mr. Perry had been informed by Mr. Vernon, of Vernon-Benshoff, that approximately 6,000,000 dentures were sold yearly to the public. Vernon-Benshoff had sold vernonite to retail dealers at $2.50 per unit, who in turn had sold to dental laboratories and dentists at $4 per unit.

Du Pont estimated they could manufacture denture blanks at $0.15 per unit including material, labor, and overhead. However, an over-all cost of $0.25 to $0.30 per unit was allowed to cover research development, administration, etc. Du Pont decided to charge its distributor $1 per unit and sales and promotion would be handled by the distributor at a cost of about $0.50 per unit to the distributor.[60]

Du Pont estimated that its first year it would sell about 500,000 dentures at a gross profit of $400,000. J. A. Burchel, assistant general manager of the plastics department of du Pont, reported this profit estimate to a special meeting of the executive committee on October 27, 1938, and added:[61]

"I stated that the business and profit which we could forecast in dentures was our main reliance to place the Lucite operations on a profitable basis within the near future, * * *."

On the subject of a license to Röhm & Haas under the Strain and Tidd patents, Mr. Burchel said:[62]

"In the discussion of terms I stated, and was supported by Mr. Echols, that we should endeavor to maintain the maximum of control as to methods of distribution and price control if this could be legally and properly done.

"Mr. Lammot du Pont asked me if we had taken into consideration the recent New Deal attitude with relation to patent monopolies. I replied we had not, but that we felt that with patents which our legal department considered valid we were entitled to such a monopoly as patents ordinarily conveyed and that we were not aware of any general policy by other companies to take a different view."

The negotiations between du Pont and Röhm & Haas during the latter part of 1938 and early 1939 were concerned mainly with the reluctance of Mr. Haas to discontinue selling the unmixed powder and liquid methyl methacrylate. Mr. Haas expressed his desire to sell the monomer and polymer to Detroit Dental and Vernon-Benshoff at a price about the same as du Pont's price to Caulk. Du Pont refused to retreat from its previously announced position whereupon Haas threatened to attempt to break the du Pont patents. Du Pont was anxious to avoid such a contest.

Precisely why Röhm & Haas changed its course of action and accepted a license from du Pont whereby Röhm & Haas was to manufacture the blanks is not entirely clear, especially when it is realized that Mr. Haas had contended that he was automatically licensed under the Strain patent because of the disclosure in one of the Röhm & Haas applications in the 1936 interference settlement. Furthermore Röhm & Haas licensed du Pont under the Chalmers patent as well as consenting to a license from I. G. Farben to du Pont under the Fikentscher patent. Two factors tend to explain these con-

[60] Exhibit 60.
[61] Exhibit 61.
[62] Exhibit 62.

Digitized by Google

cessions to du Pont. First, the license du Pont received from I. G. under the Fikentscher patent restricted du Pont from using this patent in the manufacture of cast sheets. It should be noted that the Fikentscher patent related to a new mixture of synthetic resins which could be utilized in cast sheets as well as in many other forms. Second, Röhm & Haas and du Pont agreed upon the prices at which the methacrylate dentures were to be sold. On this last point a report by J. F. Bergin of Röhm & Haas on a conference held with du Pont attorneys on December 21, 1938, states: [63]

"* * * that we would consent to their having a full license under the Chalmers patent if the selling policies of the two companies could be brought into line."

Then on February 17, 1939, Mr. Bergin reporting on another conference held with Messrs. Gawthrop and Castle of du Pont, stated: [64]

"The matter of price fixing was briefly discussed. Du Pont may want to insert a clause giving them the right to fix prices on the dental blanks, but they have not made up their minds on this point. I told him that we had given some consideration to that but had concluded that the less said about price fixing the better. Mr. Castle stated that by putting a price-fixing clause into the agreement, possible future legal complications would be avoided. In this he is right, for it is legal to have a licensor fix the first sales price of a patented article. Mr. Castle suggested that any discussion of prices be by personal interview and not by correspondence."

Soon thereafter price fixing was settled, for Mr. Haas reported on April 14, 1939, that Mr. Wardenburg had called and—[65]

"He mentioned that Detroit Dental Manufacturing Co. are underselling Caulk in the New York market, and I think we have to stop this at once."

It should be noted that this was prior to the execution of the formal agreement with du Pont which was not signed until July 17, 1939.

Before the du Pont agreement was signed Röhm & Haas entered into practically identical distributor agreements on June 9, 1939, and July 3, 1939, with Vernon-Benshoff and Detroit Dental, respectively.

The agreement with the Detroit Dental Manufacturing Co.[66] recited that since Röhm & Haas had secured rights under du Pont's Strain and Tidd patents, therefore it was agreed that Röhm & Haas would manufacture the denture blanks of approximately 30 grams weight per unit and sell them to Detroit Dental.

Detroit Dental agreed to assign its trade name Crystolex to Röhm & Haas.

It was provided further that the sales policy, sales price, and all advertising relating to the denture bases were to be subject to the approval of Röhm & Haas.

Röhm & Haas granted Detroit Dental a sublicense under the Strain and Tidd patents to mold dentures from the mixtures purchased from Röhm & Haas and to sell throughout the United States, its territories and possessions but it was expressly agreed that Detroit Dental would not export denture base materials to any foreign country and would use its best efforts to prevent its customers from exporting this material.

Röhm & Haas agreed that if they should sell on more favorable terms than those granted under this contract to Detroit Dental, then those terms would be made available to Detroit Dental.

The agreement was to continue until June 7, 1955, and was signed by Otto Haas for Röhm & Haas and by Robert Kerr for Detroit Dental Manufacturing Co.

The agreement with Vernon-Benshoff was identically worded except that the trade name "Vernoite" was substituted for "Crystolex." [67]

The relationship between Caulk Co. and du Pont was never reduced to a formal agreement but was established by correspondence whereby Caulk was appointed exclusive distributor of Lucitone dentures. Matters such as prices, advertising, sales policies, etc., were to be worked out gradually.

On the matter of sales to the Government, du Pont stated: [68]

"While we prefer to have you handle all relations with the Government on Lucitone dentures, should the Government become dissatisfied and request the

[63] Exhibit 63.
[64] Exhibit 64.
[65] Exhibit 65.
[66] Exhibit 66.
[67] Exhibit 67.
[68] Exhibit 68.

Digitized by Google

privilege of buying direct from our company, either in the form of a compounded blank or in the form of monomer and polymer, we feel it is necessary in view of the du Pont Co.'s broad relationship with the Government to reserve the right to satisfy them."

DU PONT-RÖHM & HAAS DENTURE AGREEMENT

Soon after Röhm & Haas completed their distributor agreements du Pont and Röhm & Haas executed their agreement; it was signed on July 17, 1939, by A. E. Pitcher, general manager of the plastics department of du Pont and by Otto Haas, president of Röhm & Haas Co.[69]

(1) Four patents were included in the agreement, the Strain patent and Tidd patent, the first owned by du Pont, the second licensed to du Pont by Imperial Chemicals Industries, and two Chalmers patents owned by Röhm & Haas Co.

(2) Röhm & Haas received a general unrestricted license under the Strain patent for molding purposes other than for dentures.

(3) Röhm & Haas received from du Pont a nonexclusive royalty free license under the Strain and Tidd patents to make and sell for use in dental prosthesis molding mixtures of polymeric and monomeric methyl methacrylate to only Detroit Dental and Vernon-Benshoff. Röhm & Haas also received the right to sublicense these distributors under the Strain and Tidd patents to sell the mixtures throughout the United States.

(4) "* * * It is the intention of the parties that the facilities for distributing the said mixtures shall be approximately equal and it is agreed that either, in the event one or both of the above distributors should discontinue the sale of molding mixtures made by Philadelphia with the result of giving du Pont a substantial advantage in distributing facilities or in the event du Pont should increase the number of its distributors * * * then, for the purpose of again equalizing the distributing facilities of the two parties here * * * Röhm & Haas shall have a right to appoint a substitute or additional distributor or distributors the number of whom and the standing of whom in the trade may reasonably be expected to equalize again the distributing facilities of the two parties, but Röhm & Haas shall not appoint a substitute or additional distributor or distributors unless du Pont approves in writing * * *."

(5) Röhm & Haas agreed to sell the licensed mixtures only in substantially the same unit sizes as du Pont sold such mixtures and du Pont agreed to notify Röhm & Haas of any change in the unit size.

(6) Röhm & Haas granted du Pont a nonexclusive royalty free license under the Chalmers patents to practice the inventions described therein, and to manufacture and/or sell the products throughout the United States, together with the right to grant sublicenses to its customers to process materials purchased from du Pont.

(7) The agreement was to remain in effect until the expiration of the last patent included in the agreement.

The correspondence taken from the du Pont files brings out that I. C. I. wished to condition its permission to du Pont to grant a sublicense under the Tidd patent by a provision that Röhm & Haas and its distributors should not export either the powder and liquid methyl mathacrylate or the prepared blank. Du Pont pointed out it could not legally restrict Röhm & Haas since the latter was licensed under the Hill patent covering the polymer of methyl methacrylate and there was no patent on the monomer. However, I. C. I. was satisfied when informed that because of the agreements Philadelphia had with I. G. Farben and Darmstadt, exports of any acrylic were forbidden. That Philadelphia recognized this restriction is illustrated by the export provision in its distributor agreements with Vernon-Benshoff and Detroit Dental Co.

As a result of this agreement between du Pont and Rohm & Haas of July 17, 1939, rigid control was executed by du Pont over Röhm & Haas by restricting—

(1) The number of distributors, as well as designating the particular distributors for Röhms & Haas:

(2) The approximate portion of the market reserved to du Pont and Röhm & Haas;

(3) The exact size of the manufactured blank;

(4) The denial, inferentially, of the right to market unmixed combinations of powder and liquid methyl methacrylate;

[69] Exhibit 69.

Digitized by Google

(5) The territory within which Röhm & Haas and its distributors might sell.

Outside of the written agreement it is clear there was an oral understanding between du Pont and Röhm & Haas as to the prices to be charged. Both Röhm & Haas and du Pont sold plastic blanks to their sole distributors, Detroit Dental and Vernon-Benshoff for Röhm & Haas, and Caulk for du Pont, at $1 per unit, these distributors in turn sold to the dental retail dealers at $2.50 per unit, and the retail dealers sold to the dental laboratories and dentists at $4 per unit. Thus an identical price structure was maintained throughout the entire marketing process from manufacturer to the individual dentists.

It is reported that 75 to 80 percent of the dental retail dealers are members of the American Dental Trade Association, which apparently has restrictive provisions against retail price cutting by its members. If this is true, it would appear that the mere isssance of retail list price by Röhm & Haas and du Pont would be sufficient to maintain prices all the way to the consumer.

The Detroit Dental Co. (later the name was changed to Kerr Dental Co.) chafed under the rigid price control. Before the licensing agreements, Kerr Dental had sold at lower prices than those set by Röhm & Haas and du Pont. Kerr frequently urged price reductions, stating that the retail price could drop as low as $2.50 per unit and still a substantial profit could be made.

On the other hand, Vernon-Benshoff Co. opposed, as did Caulk Co., any reduction of prices, since it wished to realize the maximum of profit on methacrylate dentures before some new product might appear on the market which might displace methacrylate.

In accordance with its agreement with du Pont, Röhm & Haas discontinued sale of powder and liquid to Kerr Dental Co. and instead provided Kerr Dental Co. with the prepared blank.

Du Pont sent out letters to all dental manufacturers who were making methocrylate dentures, informing them they were infringing du Pont's patents and ordering them to desist. Since the only sources of supply of the monomer necessary in the making of dentures were du Pont and Röhm & Haas, both companies discontinued all sales of the monomer, continuing to sell without restriction the commercial molding powders used widely in industry for making auto dials and gages, and articles such as hairbrush backs, combs, etc.

However, du Pont and Röhm & Haas discovered that these small dental manufacturers utilized a process of "cracking" the polymer, i. e., powder, of methyl methocrylate to produce the necessary monomer. These small producers then used this monomer and the commercial molding powder purchased from du Pont or Röhm & Haas to supply a denture base which greatly undersold the products marketed by Caulk, Kerr, and Vernon-Benshoff. These bootleg products retailed from $0.50 up to $2.75 per unit. The largest bootleggers appear to have been Cosmos Dental Co., New York City; Acril Co., Brooklyn, N. Y.; Archer Dental Manufacturing Co., Chicago, Ill.; Acralite Dental Co., New York City; as well as several dozen very small concerns.

These companies were encouraged to enter the methacrylic denture field because of the artificially high prices exacted by du Pont and Röhm & Haas. These two companies marketed their methacrylate commercial molding powders at $0.85 per pound. Yet the methacrylate powder and liquid cost the dental laboratories and dentists $4 for a unit which weighs about 30 grams. Thus methacrylate when marketed for ordinary commercial purposes sold for $0.85 per pound but when sold for denture purposes cost the dental profession approximately $50 per pound. It is not surprising the independents were purchasing commercial molding powder and utilizing it in the denture field.

Because of the serious competition presented by the bootleggers, du Pont and Röhm & Haas began a vigorous campaign to locate these small producers and cut off not only their supplies of monomer but also their supplies of molding powder.

One major exception to the discontinuance of the sale of monomer was allowed in the case of Carbide & Carbon Chemicals Corporation. This corporation, through its subsidiary, Bakelite Dental Supply Co., marketed a denture base under the trade name of "Luxens 44," which was composed of a combination of vinylite and methyl methacrylate monomer. When Carbide & Carbon Co. requested du Pont to sell it monomer, the latter agreed for the following reasons:

(1) "The Strain and Tidd patents were not infringed."

(2) "As a large and powerful corporation, they could undoubtedly find some way to make a denture commercially acceptable and they might even find a way to make their own monomer."

Digitized by Google

privilege of buying direct from our company, either in the form of a compounded blank or in the form of monomer and polymer, we feel it is necessary in view of the du Pont Co.'s broad relationship with the Government to reserve the right to satisfy them."

DU PONT-RÖHM & HAAS DENTURE AGREEMENT

Soon after Röhm & Haas completed their distributor agreements du Pont and Röhm & Haas executed their agreement; it was signed on July 17, 1939, by A. E. Pitcher, general manager of the plastics department of du Pont and by Otto Haas, president of Röhm & Haas Co.[69]

(1) Four patents were included in the agreement, the Strain patent and Tidd patent, the first owned by du Pont, the second licensed to du Pont by Imperial Chemicals Industries, and two Chalmers patents owned by Röhm & Haas Co.

(2) Röhm & Haas received a general unrestricted license under the Strain patent for molding purposes other than for dentures.

(3) Röhm & Haas received from du Pont a nonexclusive royalty free license under the Strain and Tidd patents to make and sell for use in dental prosthesis molding mixtures of polymeric and monomeric methyl methacrylate to only Detroit Dental and Vernon-Benshoff. Röhm & Haas also received the right to sublicense these distributors under the Strain and Tidd patents to sell the mixtures throughout the United States.

(4) "* * * It is the intention of the parties that the facilities for distributing the said mixtures shall be approximately equal and it is agreed that either, in the event one or both of the above distributors should discontinue the sale of molding mixtures made by Philadelphia with the result of giving du Pont a substantial advantage in distributing facilities or in the event du Pont should increase the number of its distributors * * * then, for the purpose of again equalizing the distributing facilities of the two parties here * * * Röhm & Haas shall have a right to appoint a substitute or additional distributor or distributors the number of whom and the standing of whom in the trade may reasonably be expected to equalize again the distributing facilities of the two parties, but Röhm & Haas shall not appoint a substitute or additional distributor or distributors unless du Pont approves in writing * * *."

(5) Röhm & Haas agreed to sell the licensed mixtures only in substantially the same unit sizes as du Pont sold such mixtures and du Pont agreed to notify Röhm & Haas of any change in the unit size.

(6) Röhm & Haas granted du Pont a nonexclusive royalty free license under the Chalmers patents to practice the inventions described therein, and to manufacture and/or sell the products throughout the United States, together with the right to grant sublicenses to its customers to process materials purchased from du Pont.

(7) The agreement was to remain in effect until the expiration of the last patent included in the agreement.

The correspondence taken from the du Pont files brings out that I. C. I. wished to condition its permission to du Pont to grant a sublicense under the Tidd patent by a provision that Röhm & Haas and its distributors should not export either the powder and liquid methyl mathacrylate or the prepared blank. Du Pont pointed out it could not legally restrict Röhm & Haas since the latter was licensed under the Hill patent covering the polymer of methyl methacrylate and there was no patent on the monomer. However, I. C. I. was satisfied when informed that because of the agreements Philadelphia had with I. G. Farben and Darmstadt, exports of any acrylic were forbidden. That Philadelphia recognized this restriction is illustrated by the export provision in its distributor agreements with Vernon-Benshoff and Detroit Dental Co.

As a result of this agreement between du Pont and Rohm & Haas of July 17, 1939, rigid control was executed by du Pont over Röhm & Haas by restricting—

(1) The number of distributors, as well as designating the particular distributors for Röhms & Haas:

(2) The approximate portion of the market reserved to du Pont and Röhm & Haas;

(3) The exact size of the manufactured blank;

(4) The denial, inferentially, of the right to market unmixed combinations of powder and liquid methyl methacrylate;

[69] Exhibit 69.

Digitized by Google

(5) The territory within which Röhm & Haas and its distributors might sell.

Outside of the written agreement it is clear there was an oral understanding between du Pont and Röhm & Haas as to the prices to be charged. Both Röhm & Haas and du Pont sold plastic blanks to their sole distributors, Detroit Dental and Vernon-Benshoff for Röhm & Haas, and Caulk for du Pont, at $1 per unit, these distributors in turn sold to the dental retail dealers at $2.50 per unit, and the retail dealers sold to the dental laboratories and dentists at $4 per unit. Thus an identical price structure was maintained throughout the entire marketing process from manufacturer to the individual dentists.

It is reported that 75 to 80 percent of the dental retail dealers are members of the American Dental Trade Association, which apparently has restrictive provisions against retail price cutting by its members. If this is true, it would appear that the mere isssance of retail list price by Röhm & Haas and du Pont would be sufficient to maintain prices all the way to the consumer.

The Detroit Dental Co. (later the name was changed to Kerr Dental Co.) chafed under the rigid price control. Before the licensing agreements, Kerr Dental had sold at lower prices than those set by Röhm & Haas and du Pont. Kerr frequently urged price reductions, stating that the retail price could drop as low as $2.50 per unit and still a substantial profit could be made.

On the other hand, Vernon-Benshoff Co. opposed, as did Caulk Co., any reduction of prices, since it wished to realize the maximum of profit on methacrylate dentures before some new product might appear on the market which might displace methacrylate.

In accordance with its agreement with du Pont, Röhm & Haas discontinued sale of powder and liquid to Kerr Dental Co. and instead provided Kerr Dental Co. with the prepared blank.

Du Pont sent out letters to all dental manufacturers who were making methocrylate dentures, informing them they were infringing du Pont's patents and ordering them to desist. Since the only sources of supply of the monomer necessary in the making of dentures were du Pont and Röhm & Haas, both companies discontinued all sales of the monomer, continuing to sell without restriction the commercial molding powders used widely in industry for making auto dials and gages, and articles such as hairbrush backs, combs, etc.

However, du Pont and Röhm & Haas discovered that these small dental manufacturers utilized a process of "cracking" the polymer, i. e., powder, of methyl methocrylate to produce the necessary monomer. These small producers then used this monomer and the commercial molding powder purchased from du Pont or Röhm & Haas to supply a denture base which greatly undersold the products marketed by Caulk, Kerr, and Vernon-Benshoff. These bootleg products retailed from $0.50 up to $2.75 per unit. The largest bootleggers appear to have been Cosmos Dental Co., New York City; Acril Co., Brooklyn, N. Y.; Archer Dental Manufacturing Co., Chicago, Ill.; Acralite Dental Co., New York City; as well as several dozen very small concerns.

These companies were encouraged to enter the methacrylic denture field because of the artificially high prices exacted by du Pont and Röhm & Haas. These two companies marketed their methacrylate commercial molding powders at $0.85 per pound. Yet the methacrylate powder and liquid cost the dental laboratories and dentists $4 for a unit which weighs about 30 grams. Thus methacrylate when marketed for ordinary commercial purposes sold for $0.85 per pound but when sold for denture purposes cost the dental profession approximately $50 per pound. It is not surprising the independents were purchasing commercial molding powder and utilizing it in the denture field.

Because of the serious competition presented by the bootleggers, du Pont and Röhm & Haas began a vigorous campaign to locate these small producers and cut off not only their supplies of monomer but also their supplies of molding powder.

One major exception to the discontinuance of the sale of monomer was allowed in the case of Carbide & Carbon Chemicals Corporation. This corporation, through its subsidiary, Bakelite Dental Supply Co., marketed a denture base under the trade name of "Luxens 44," which was composed of a combination of vinylite and methyl methacrylate monomer. When Carbide & Carbon Co. requested du Pont to sell it monomer, the latter agreed for the following reasons:

(1) "The Strain and Tidd patents were not infringed."

(2) "As a large and powerful corporation, they could undoubtedly find some way to make a denture commercially acceptable and they might even find a way to make their own monomer."

Digitized by Google

(3) "By selling them we should retain a reasonable degree of copperation and goodwill, whereas in refusing to sell them the opposite would be true."

(4) "In selling them we believe it will be legal to obtain an agreement not to resell methyl methacrylate monomer as such and to market it in dentures in a colloided form" (excerpt from letter of December 19, 1939, from du Pont to Caulk).[70]

As a result of the removal from the market of the Detroit Dental Co.'s unmixed powder and liquid combination, together with the high prices charged by the licensed distributors, the dental profession was critical of the stand taken by du Pont and Röhm & Haas. The American Dental Association, Chicago, Ill., vigorously protested the removal of the Detroit dental unmixed powder and liquid combination, as did the American Full Denture Society. Du Pont attempted to placate them by stating that most dentists were not sufficiently educated in the chemistry of the methacrylates to safely compound them.

As another aspect of their campaign against the unlicensed manufacturers, du Pont and Röhm & Haas issued circular letters to the dental profession and dental laboratories pointing out the dangers of using unlicensed materials which might contain materials injurious to the patient's health. This program received a serious setback in September 1940 at the American Dental Association meeting when Dr. Paffenberger, of the United States Bureau of Standards, read a paper analyzing the physical properties of the various acrylic denture materials. He stated there was little difference between the licensed and unlicensed materials. This practically destroyed the argument of the licensed distributors attempting to justify the wide price differential beween the licensed and unlicensed denture materials.

As a follow-up on its notices of infringement, du Pont instituted a patent-infringement suit against Cosmos Manufacturing Co. in October 1939. The Cosmos company contested the validity of the Strain and Tidd patents, but the suit never reached trial as it was dismissed in December 1940 without prejudice to either party and without assessment of costs.

In response to the widespread criticism of the dental profession, du Pont, in April 1940, authorized the licensed distributors to return to the market the unmixed monomer and polymer denture materials at a slight reduction in prices. Identical prices were quoted by Röhm & Haas to Kerr, and Vernon-Benshoff, and by du Pont to Caulk. A letter[71] from Röhm & Haas to both of its distributors specifically stated the following prices were to be charged: One to nine units: Price to distributor, $1; wholesale price, $2.40; retail price, $3.60. Ten-unit boxes; To distributors, $0.90; wholesaler's price, $2.25; retailer's price, $3.25. However, the trade continued to protest about high prices.[71]

Denture Sales in Canada

In May 1938 du Pont had assigned the Canadian rights in the Strain patent to Canadian Industries, Ltd. C. I. L. had also received the Canadian rights in the Tidd patent from I. C. I. Thus when Röhm & Haas' distributors wished to market their denture materials in Canada it was necessary to receive licenses from C. I. L.

On June 5, 1940, Röhm & Haas entered into an agreement[72] with C. I. L. whereby the former received a nonexclusive license under the Canadian Strain and Tidd patents to market denture bases through Vernon-Benshoff and Kerr Dental.

Röhm & Haas and the distributors were not to manufacture the materials in Canada.

A royalty figured on the "mill cost" to Röhm & Haas was to be paid by Röhm & Haas to C. I. L.

Röhm & Haas also agreed not to attack the validity of the enumerated patents during the term of the agreement, which was to last until the expiration of the last of aforementioned patents.

In turn Röhm & Haas sublicensed its distributors, Vernon-Benshoff and Kerr Dental, to sell in Canada dental molding mixtures manufactured by Rohm & Haas.

Kerr and Vernon-Benshoff agreed that the sales policy, sales prices, and advertising were to be subject to the approval of Röhm & Haas.

Both distributors agreed to pay Röhm & Haas one-half of the royalty paid by Röhm & Haas to C. I. L. on sales of Vernonite and Crystelex.

Du Pont's arrangements in Canada were to sell the denture base materials to C. I. L., who in turn sold them to Caulk for distribution throughout Canada.

[70] Exhibit 70.
[71] Exhibit 71.
[72] Exhibit 72.

Digitized by Google

Other Export Trade

Since the denture base materials were methyl methacrylate they were subject to the restrictions on exports as set forth in the agreements Röhm & Haas, Philadelphia, entered into with I. G. Farben in 1934 and with Darmstadt in 1935, Philadelphia refused to allow its distributors to export until Darmstadt found itself cut off from its export markets after the outbreak of the war in 1939. At that time permission was given to the distributors to export for the duration of the war. However, Paladon, Ltd., of Rio de Janeiro, Brazil, apparently was a sizable customer of Darmstadt and Philadelphia sold directly to this firm, instead of through its distributors, and supplied it with methyl methacrylate monomer and polymer.

The division of world territories set up in the agreement du Pont signed with I. C. I. in 1929 and renewed in 1939 controlled the export of denture base materials. Du Pont refused Caulk permission to export denture bases to I. C. I.'s exclusive territory. Specific inquiries and orders from Australia, New Zealand, and South Africa were turned down by du Pont and referred to I. C. I.[73] After the war began in September 1939 at I. C. I.'s request, du Pont began supplying markets formerly part of I. C. I.'s exclusive territory for the duration of the war.

Relations of Röhm & Haas With Winthrop Chemical Co.

The agreement Röhm & Haas signed with I. G. Farben in 1934 entered into the denture field in a rather peculiar manner. Under the terms of this agreement I. G. had reserved to itself the exclusive United States rights on the application of acrylics in the pharmaceutical field. No mention was made of their use in the denture field. At a later date Winthrop Chemical Co. received I. G.'s rights in the United States in the pharmaceutical field. Winthrop attempted to interpret the term "pharmaceutical" to include "dentures," and so informed Röhm & Haas. The latter had already begun commercial exploitation of the denture-base field and so refused to vacate in favor of Winthrop. Apparently in order to maintain friendly relations with I. G. it was agreed that Röhm & Haas would attempt to formulate for Winthrop a denture base material derived from I. G.'s Fikentscher patent, and beginning October 1939 until such time as a satisfactory material was manufactured Röhm & Haas agreed to pay Winthrop $500 per month. The production of a satisfactory material was accomplished by March 1940 and in accordance with its agreement Röhm & Haas paid Winthrop $2,500.

This material was sold to Winthrop at cost plus 10 percent—the regular price to I. G.'s "friendly firms." The conditions Röhm & Haas attached to this price were consumption of at least 1,000 pounds per month and as stated in a letter of May 27, 1940,[74] from John F. Bergin to Mr. McClintock, of Winthrop, "* * * your getting this price also presupposes that you will cooperate with us in the denture field."

Modification of the du Pont-Röhm & Haas Denture Agreement

With the return to the market of an unmixed powder and liquid combination, the patent attorneys of du Pont concluded that du Pont could not legally control the sales of liquid and powder since in an unmixed state they were outside the scope of the Strain and Tidd patents. Accordingly on April 1, 1940, du Pont authorized Caulk Co. to send out a circular announcement to all dental laboratories and dentists offering them a royalty-free license under the Strain and Tidd patents insofar as they related to dentistry. The dentist or laboratory was free to obtain his material from any source. One exception was made, namely, that the licensee did not receive the right to sell plastic blanks of methacrylate—this was to protect Lucitone and Vernonite.

As a result of this free license Cosmos and all other dental houses marketing unmixed monomer and polymer were not infringing the Strain and Tidd patents. As previously noted the suit against Cosmos was eventually dropped.

Somewhat later, on February 11, 1941,[75] the agreement of July 17, 1939, between Röhm & Haas and du Pont was canceled and in its place was substituted an agreement whereby du Pont granted Röhm & Haas licenses under the Strain and Tidd patents without restrictions as to distributors or size of denture blank to be manufactured by Röhm & Haas. The right to grant sublicenses to its customers was also given to Röhm & Haas.

[73] Exhibit 73 *a, b, c.*
[74] Exhibit 74.
[75] Exhibit 75.

Digitized by Google

The provisions of the license to du Pont from Röhm & Haas under the Chalmers patent remained unchanged.

The distribution of the denture base materials continued through the same channels—Kerr Dental, and Vernon-Benshoff, for Röhm & Haas, and Caulk for du Pont. Identical prices continued to be charged. Control over the denture field continued to be exerted by Röhm & Haas and du Pont. Since they alone manufactured methyl methacrylate the independent, unlicensed manufacturers of denture base materials were completely dominated by these two firms. The competitive pattern was unchanged for the former so-called bootleggers, although du Pont had recognized that they were not infringing the Strain and Tidd patents. Du Pont and Röhm & Haas continued to refuse all orders for monomer with the expressed purpose to put the independents out of business. Further, the two firms actively policed all sales of commercial molding powder by requiring all purchasers to sign a license agreement [76] providing—

(1) they would not resell the powder in the same form as purchased;
(2) nor would they use it in the manufacture of dentures;
(3) these purchasers had to agree to furnish proof at any time that they were conforming to this agreement; and
(4) they recognized the right reserved by du Pont and Röhm & Haas to discontinue sale to them of this product for any reason.

The effect of this boycott by Röhm & Haas and du Pont rendered meaningless the free licenses issued by du Pont since if only the materials distributed through Kerr, Vernon-Benshoff, and Caulk were to be available, there was no need to license the dental profession under the Strain and Tidd patents since all purchasers would come from already licensed distributors.

The sales reports from the distributors during the early part of 1941 indicate there was a noticeable decline in the business of the independents since they were no longer able to obtain supplies of monomer and polymer.

Cosmos Dental Products, Inc., when faced by this situation threatened to expose du Pont's activities to the Department of Justice. Not long thereafter du Pont offered to license Cosmos on a royalty basis under the Hill patent covering the polymer of methyl methacrylate if the Cosmos company could invent a method of making methyl methacrylate not covered by du Pont patents. However, du Pont refused to license Cosmos under any of its patents relating to the process of manufacturing methyl methacrylate. The outcome of these negotiations is not presently known.

Government Orders

In the spring of 1941 both the Army and the Navy became interested in obtaining quantities of denture materials. The Navy invited bids on a contract for 400 10-unit packages of denture base. Kerr, Caulk, and Vernon-Benshoff submitted identical bids of $22.50 per package [77] whereas the only other large supplier, Acralite Co., bid $7.26 per package, approximately one-third as much as the bids of the "Holy Three," as Kerr, Vernon-Benshoff, and Caulk were often termed by the dental trade. April 4 the Navy rejected all bids and the purchase request was canceled.

In May, Philadelphia advised its distributors there would be a reduction in the price on a pending denture contract of the Army. The amounts bid and the disposition of this contract is not at present known since these transactions occurred after the completion of the Department's investigation.

DENTURES

Conclusions of Fact

1. The agreement of July 17, 1939, between du Pont and Röhm & Haas, Philadelphia, provided for cross licenses under two du Pont-controlled patents dominating the denture field and under two Röhm & Haas patents not pertaining to dentures. Röhm & Haas, Philadelphia, was restricted to two specified distributors and also was restricted as to the type and size of denture unit to be marketed.

2. Röhm & Haas, Philadelphia, and du Pont, manufacturers, and Kerr Dental Manufacturing Co., Vernon-Benshoff Co., and L. D. Caulk Co., distributors, have

[76] Exhibit 76.
[77] Exhibit 77.

Digitized by Google

agreed upon the prices charged to the distributors, wholesalers, and retailers, since the early part of 1939.

3. Du Pont and Röhm & Haas, Philadelphia, as the sole producers of methyl methacrylate, have attempted to eliminate competition in the acrylic denture field, by their agreement to refuse all sales of raw materials to independent manufacturers of methyl methacrylate denture bases.

SECTION IV

Röhm & Haas, Philadelphia South American Trade

From the early twenties until the outbreak of the present war the export business of Röhm & Haas Co., Philadelphia, was very small.

A review of the various agreements pertaining to the more important products introduced and marketed by the company during this period will give one a clearer understanding of the basis for Philadelphia's export policy. Attention need be focused only on the provisions of the agreements wherein R. & H.'s market territory is defined.

In 1922, Röhm & Haas, Philadelphia, entered into a patent agreement with Badische Anilin & Soda Fabrik, Baden, German (now I. G. Farbenindustrie A. G.) whereby Philadelphia received the exclusive right, under the German firm's patents, to manufacture and sell synthetic tanning materials in the United States and Canada only.[78]

In 1927 Philadelphia by agreement by R. & H., Darmstadt provided for a world division of market territories. This agreement pertained particularly to products manufactured and sold by parties at this date, for example, Oropon, a product employed in the tanning trade. However, provision was made for products developed thereafter. In such case the developing party was to offer the other party the exclusive rights of sale in his territory. If this could not be accomplished, other arrangements could be made to enable the party, who invented the product, to sell in the territory of the other but refrain from using the firm name.

In June 1934 Philadelphia executed a patent agreement with Theo. Goldschmidt Corporation, an American subsidiary of a German firm of the same name.[79] By the terms of this agreement Philadelphia received a license under patents assigned to the Theo. Goldschmidt Corporation, by its parent German firm for the manufacture and sale of Tego gluefilm, within the United States and Canada.

The Röhm & Haas Co., Philadelphia, then assigned to its affiliated company, Resinous Products & Chemical Co., Inc., Philadelphia, all patent rights received under the above-named agreement. Tego is a gluefilm used as a bonding agent in the manufacture of plywood and is used extensively in the aircraft and marine fields.

In October 1934 Philadelphia and I. G. Farbenindustries A. G., cross-licensed each other under their respective patents covering the preparation and application of acrylic and methacrylic acid. The territory reserved to Philadelphia was the United States and Canada.

In November 1934 Philadelphia Co. and R. & H., Darmstadt executed a contract whereby Philadelphia Co. was granted the exclusive right under Darmstadt's patents to manufacture and sell acrylic and methacrylic acids and their derivatives. Philadelphia's activities were restricted to the United States and Canada.

In August 1938 Philadelphia was granted permission by R. & H., Darmstadt to export a product covered by the above-mentioned Darmstadt patents, i. e., Plexiglas, but only in the form of replacement parts for airplanes manufactured in the United States. This concession was granted, however, subject to the payment to Darmstadt of a royalty commission of 10 percent on the sale.

It can readily be observed from the above agreements, that Philadelphia's business in the synthetic tanning and plastics fields is wholly dependent upon the right to manufacture such materials under patents owned by German firms. The licensors having restricted Philadelphia's activities to the United States and Canada, left the South and Central markets open for German exploitation.

With the outbreak of the present war, the British blockade made it impossible for the German firms to supply the South and Central American markets with German-made goods; therefore, Philadelphia and its affiliated firm, Resinous

[78] Exhibit 78.
[79] Exhibit 79.

Digitized by Google

Products & Chemical Co., Inc., were called upon to provide the requirements of the German agents.

Under the above arrangements Philadelphia and its affiliated firm are permitted, for the duration of the war, to supply the South American markets, but they are obliged to pay the German firms, in addition to their regular royalty fee, a certain commission on all sales in such countries.

Shortly after the outbreak of hostilities, i. e., September 14, 1939, Röhm & Haas, Darmstadt requested Philadelphia to supply the licensor's agents in Middle Central and South America, Japan, and China, with the above-mentioned product. However, subject to following provisions:

1. The regular license royalties to be paid on all Plexiglas sold in above countries;
2. An additional 15 percent commission would be paid on all sales of Plexiglas to the German agents;
3. That the arrangement was to terminate promptly when the German firm could again supply these markets.

The above proposal was not immediately accepted by Philadelphia because they were not certain they could sell at Darmstadt's prices, nor could they allow 15-percent royalty or commission on such sales.

Pursuant to an arrangement whereby Röhm & Haas, Darmstadt would receive a royal figured on a sliding scale on the thickness of Plexiglas, range to be from 3 to 25 percent, Röhm & Haas, Philadelphia, sold Plexiglas in such markets.

An arrangement similar to the one above was put into operation by Philadelphia for the sale of synthetic tanning materials to the representatives of I. G. Farbenindustrie in Central and South America.

Pursuant to the agreement made in 1922 with Badische Aniline & Soda Fabrik (now I. G. Farbenindustrie), Röhm & Haas Co., Philadelphia, was prevented from exporting synthetic tans to the world markets. However, the British blockade instituted after the declaration of war in September 1939 forced I. G. Farben to look to another method of supplying its world markets, especially South America. Therefore, I. G. wrote to Röhm & Haas Co., Philadelphia, on December 22, 1939, stating:[80]

"The arrangements we have with your firm about synthetic tanning limits the markets where you are free to sell your synthetic tannings to the United States of America and Canada, whereas we supply the rest of the world * * *. Most of these markets can at present not be supplied by us regularly and in order to allow our friends in those markets to maintain their position, we should very much appreciate if you could supply them * * *.

"We have therefore informed our friends in the South and Middle American States to approach you through the Advance Solvents Chemical Corporation, New York. * * *."

Mr. Haas, President of Röhm & Haas Co., Philadelphia, replied in the following vein on January 22, 1940:[81]

"I am in receipt of your letter of December 22. Of course, we shall be glad to follow your wishes in every detail.

"I attach herewith a list of the shipments which we have already made to Bogota, Lima, and Rio. These orders have come to us entirely unsolicited and we thought it in your best interest to fill them.

"I wish to assure you that no matter who is doing the shipping we shall revert to the status quo antem as soon as normal conditions have been restored. The thought uppermost in my mind is to serve you in the most faithful and most efficient way possible in this emergency."

A like arrangement was effected between Theo. Goldschmidt A. G. of Essen, Germany, with Resinous Products & Chemical Co., Philadelphia, for the sale of Tego gluefilm in Central and South America.

On January 22, 1940, the Resinous Products & Chemical Co. wrote to Theo. Goldschmidt Corporation of New York City stating[82]—

"We note from the enclosures contained in your letter of January 18, that Essen is apparently referring their South American inquiries to us. Will you please advise us whether we are now free to make shipments to South America?

"We have also had one or two inquiries from Mexico and we would also like to know whether or not we are free to make shipments to that country. Since

[80] Exhibit 80.
[81] Exhibit 81.
[82] Exhibit 82.

Digitized by Google

this matter is fairly urgent as far as one Mexican customer is concerned, we would be obliged if you would give us as prompt a reply as possible."

The next day the following reply was received from Theo. Goldschmidt Corporation.[83]

"Replying to your letter of January 22, we shall be pleased to have you supply Tego Resin Film to Mexico and South America until further notice."

During 1939 Philadelphia's export sales averaged about $29,300 per month, and in 1940 about $34,900 per month, which indicates that the increase can be directly related to the releasing of export restrictions by the German firms.

The net effect of such arrangement appears to be the preservation of the German economic position in such materials, to the detriment of legitimate American competition, for further German exploitation in South America upon the termination of the hostilities.

Since late 1940 Röhm & Haas state they have not been accepting new business from any firms on the British blacklist, and are dropping longtime agents in such places as Columbia, Mexico, and Peru who are suspected by the Department of Commerce of being pro-Nazi.

In connection with their South American shipments, Philadelphia have laid down the following restrictions in their export department to which they claim to be carefully adhering:

1. Shipping papers must always show the name of the real purchaser.
2. No shipment can be reexported, but must be used in the country to which it is shipped.
3. They ascertain that the articles shipped are of a kind required for use in the country of destination.
4. Export licenses must be secured in all cases where there is the slightest possibility of an export license being required.

Under date of April 26, 1941, Philadelphia addressed letters to several firms in South America, including those in Columbia and Peru who were suspected of being pro-Nazi. The letters stated that on account of increasing shortages of important raw materials, the Philadelphia company will be unable to continue making shipments of various chemicals used in the tanning and textile industry.

But the emergency arrangements may still be operative, particularly in view of the contents of a letter dated May 23, 1941, obtained from the files of the E. I. du Pont de Nemours & Co., in which Harry Kaufman, distributor for the du Pont Co. in Caracas, Venezuela, states:

"Furthermore, I ran across a steel drum of Ind. Red, which had been shipped from the U. S. A., and was marked E. G. This mark of course is some fake mark and I have observed that recently Röhm & Haas, Philadelphia, has shipped merchandise to Venezuela, under the mark E. G. and this was consigned to Blohn & Co., La Guayra. Blohm & Co. and the I. G. are good friends, so you know for any future reference this connection, and there is no doubt that all such merchandise is received by the I. G.

"I. G. or La Quinica-Bayer-Westkott & Cia., have been appointed agents for Röhm & Haas, in Philadelphia for Venezuela. I understand that this is a general hook-up between I. G. and Röhm & Haas, and please check this up with your other agents, to find out whether in such Central or South American countries, the I. G. also handles Röhm & Haas lines.

"They also receive their Hydro-sulphite (Blankit) from Röhm & Haas, in 50-kilo drums, repack it in 10-lb. tins in Venezuela and mark it "Blankit." You see, they are using United States' made merchandise to keep their German trade names on the market. Perhaps this information may interest at any time. It might be interesting to check up on Röhm & Haas and find out how far they go in helping the German trade in South America, by furnishing them with material made in the U. S. A. Soon I hope to be able to give you more information and also send you the samples of dyes promised to you."

Röhm & Haas, Philadelphia, South American Trade

Conclusions of fact.—1. On or about November 26, 1939, Röhm & Haas, Philadelphia, and Röhm & Haas, Darmstadt, entered into a supplemental agreement to their agreement of November 24, 1934, whereby they agreed to a division of territory for the sale of Plexiglas for the duration of the war, by giving Röhm

[83] Exhibit 83.

Digitized by Google

& Haas, Philadelphia, the right to sell in Central and South America, Japan, China, and Siam for that period only, it being agreed that the market is to be returned to Röhm & Haas, Darmstadt, at the end of the war.

2. On or about January 22, 1940, Röhm & Haas, Philadelphia, and I. G. Farben, Frankfurt am Main, Germany, entered into a supplemental agreement to their agreement of October 30, 1934, whereby they agreed to a division of territory for the sale of synthetic tans and other tanning materials for the duration of the war by giving Röhm & Haas, Philadelphia, the right to sell in Central and South America for that period only, it being agreed that the market is to be returned to I. G. Farben at the end of the war.

3. On or about January 23, 1940, the Resinous Products & Chemical Co., of Philadelphia, and Theodore Goldschmidt, A. G. of Essen, through its New York representative, Theodore Goldschmidt Corporation, entered into a supplemental agreement to their agreement of June 19, 1934, whereby they agreed to a division of territory for the sale of Tego-gluefilm for the duration of the war by giving the Resinous Products & Chemical Co., Philadelphia, the right to sell in Mexico and South America for that period only, it being agreed that the market is to be returned to I. G. Goldschmidt, A. G., at the end of the war.

SECTION V. SUMMATION

By way of summary, then, this investigation has exposed the manner by which Röhm & Haas Co., Philadelphia, and E. I. du Pont de Nemours, Inc., of the United States, Imperial Chemical Industries, Ltd., of Great Britain, and I. G. Farbenindustrie, and Röhm & Haas, Darmstadt, of Germany, have erected an international cartel in one field of plastics by utilizing secret patent pools and cross licenses providing for restrictions on production, price fixing, and elimination of potential competitors.

Since the most important product covered by these patent agreements, that of methyl methacrylate cast sheeting, is an indispensable war material for the production of all military airplanes, it is imperative that all restrictive patent controls over this product be removed. With the production of this cast sheeting concentrated in the hands of only two producers who gained that control by illegal methods, it is in the interest of the Nation that other individuals and firms have these patents made available to them should they desire to engage in production of this material.

In addition the evidence drives home the point that there is extreme danger to the Nation in allowing private individuals and concerns to enter into patent and marketing agreements with foreign producers with no supervision by the United States Government.

These agreements have not only violated the antitrust laws but have also forced their signers into a position opposing the enunciated foreign policy of this Government.

The growth of international and domestic cartels destroying free competitive markets must be vigorously uprooted.

The Antitrust Division has presented the evidence pertaining to merely one type of plastic for purposes of clarity, but it should be understood that this is not an isolated or extraordinary case. The Antitrust Division possesses evidence showing that it is illustrative of the situation existing in most of the important plastics.

EXHIBIT NO. 5

A NATIONAL POLICY FOR INDUSTRY

INTRODUCTION

The following statement puts forward certain views and recommendations as to the place which industry should occupy in the framework of society. It is offered by a group of industrialists as a contribution to current discussions of reconstruction. The signatories are closely connected with a wide range of British Manufacturing Industry and believe (though they have made no attempt widely to canvass others and make no claim to speak for anyone but themselves) that their views will command a large measure of support. Such a statement seemed to them called for, on the one hand as a declaration of what they conceive to be their duty to the community and on the other as a claim to recognition by the community of the aims and achievements of industry. It may help too to

Digitized by Google

strengthen that faith in the future of Great Britain which is so essential to the successful prosecution of the war.

The present struggle is one not only against aggression, but for freedom, and President Roosevelt's words, "Freedom from want which, translated into world terms, means economic understanding which will secure to every nation a healthy peacetime life for its inhabitants everywhere in the world," are applicable to domestic as much as to international relations.

As a producer, industry is by far the largest contributor to the material welfare of the nation. It has a threefold public responsibility: to the public which consumes its products, to the public which it employs, and to the public which provides the capital by which it operates and develops. The underlying conviction on which the whole of this document is based is that the spirit which should animate industry is service to the community as a whole.

The signatories believe that industry can be so organised, internally and in relation to the State, that this threefold responsibility can be effectively discharged, and the idea of service carried more fully into practice, without embarking upon changes in the social system such as might seriously and detrimentally dislocate the working basis of the national economy.

They wish to stress that they speak only as industrialists; that is to say, as persons whose experience is of the management and policy of manufacturing and producing enterprises. They do not speak for Agriculture. It is fully recognised that Agriculture is the largest branch of production; its problems, however, are different and distinct. Nor do they essay to deal with the problem of the distributor, merchant, broker, financier, banker, or insurer, whose activities differ materially. These various interests are, however, alike in this, that they all have their associated contributions to make to the welfare of the nation, and in their activities they must all be subject to the same criterion of service to the community.

Equally, the signatories do not purport to deal with the highly important question of monetary policy and international exchange. Whilst these are of cardinal importance they do not fall within the scope of the matters discussed in this statement.

The largest single section of the national capital in this country on which employment depends is devoted to Manufacturing Industry. Manufacturing Industry provides employment for a considerable proportion of the population and pays a substantial part of the national taxation. Manufacturing Industry claims, therefore, to have a primary importance for the community and ought to acknowledge a commensurate responsibility to the community.

The signatories emphasize that this is a preliminary statement only. It sets out their suggestions on broad lines and avoids detail, which in a general statement would be merely confusing. It is hoped in subsequent statements to amplify and illustrate the general principles here outlined.

The statement is divided into four sections—

Section I reviews the achievements of industry, outlines the problems which it will have to face after the war, and indicates the social and other obligations which it will have to assume if it is to solve these problems successfully and to discharge its threefold public responsibility.

Section II discusses the various forms or frameworks within which industry can function and their appropriateness to the general conception outlined in section I.

Section III indicates the general lines upon which, in furtherance of industry's aims as defined, the closer organisation of industry could proceed.

Section IV states the steps which the signatories have taken to bring their proposals nearer to fulfillment. These include the appointment of a committee to examine in much closer detail the general questions discussed in this statement, to collaborate with other interested parties, and to confer with the existing national associations and federations. Their ultimate task is to report upon the specific action which is called for, so that proposals may in due course be placed before the Government.

As is indicated in the body of this statement, the signatories recognise the very valuable work which has already been done in this field by existing organisations and hope that the suggested collaboration with them will lead to a closer association and identity of views.

I. GENERAL SURVEY

Modern industry has grown up under the system of private enterprise, or, as it is often called, the capitalist system. Its essence is the right enjoyed by all

Digitized by Google

members of the community, whether individual, corporation, or cooperative society, from the small saver to the big investor, from the small craftsman to the large manufacturing combine, to employ or invest their savings or property in any business of their choice.

Under the system of capitalist enterprise industrial production has over the past hundred years made immense strides, as a result of which the problem of scarcity resulting from underproduction has receded. The continuous development of new inventions and processes has brought about an immense expansion in the quantity and range of industrial products, together with a corresponding and progressive reduction in costs and prices. The direct result has been a great increase in the real wealth of every section of the community. Indeed the progress made in industry would suffice in itself for a still greater increase in real wealth, were it not for difficulties arising in the field of exchange and distribution. It is industry which principally creates the material basis of the nation's standard of living, a standard surpassed or equalled by that of very few other countries.

To achieve such results demands qualities of imagination, boldness, and resource in facing great and complex problems of many kinds—problems in technical development, in management and policy, in relations with labour, in the conduct of international trade negotiations, in intraindustrial relations and in relation to state policy. We claim that industry under the system of private enterprise has in fact shown these qualities and, through the work of individual firms large and small and latterly of its representative bodies, has made a great contribution to the well-being of the community. This fact is seldom acknowledged, and all too inadequately recognised.

The structure of industry varies with the varying technical and commercial needs of different trades. It has developed in a number of different forms: Private ownership under the personal management of the proprietors or partners; cooperative societies; the small joint-stock company, with the principal director often the principal shareholder; large companies, and also groupings of companies, with thousands of individual shareholders and under professional direction and management. The tendency of late years, with the increase in the size of business units, has been to enhance the directors' and managers' sense of responsibility to the community, and, although this is perhaps not generally realised, to reduce materially the influence of personal profit as a leading motive.

It is quite untrue to say that industry has followed a general policy of restricting production in order to enhance profits. The responsibility of those directing industry is to hold a just balance between the varying interests of the public as consumers, the staff and workmen as employees, and the stockholders as investors, and to make the highest possible contribution to the well-being of the nation as a whole. We believe these principles are today widely recognised and should be universally accepted. Continuous improvements in the spirit and organisation of industry were in progress before the war. One of our tasks is to improve upon these improvements and to remove any shortcomings there were in industry's approach to the handling of those questions, industrial, economic, and social, with which it is concerned. But the matter does not end there. We are faced now, still more shall we be faced after the war, with a whole range of new and formidable problems. Great changes therefore will have to be made in industry as elsewhere. It is our conviction that in industry the changes which are to be made, if they are to effect genuine and permanent improvement, must be evolutionary and practical rather than revolutionary and abstract. They must spring from past experience and be based on a true analysis of fact.

We emphasise that, above all, such changes must be such as will help industry and its several units to reach, and maintain, the highest possible degree of efficiency in every branch of its activity—in the discovery and development of new products and processes, and in every sphere of organisation, management, and workmanship.

We wish to see generally accepted, as a first charge upon industry, a code of obligations towards employees, and later in this section we shall make specific suggestions to that end. It is only necessary here to repeat that, if industry is to meet all its responsibilities—to the nation, to the consumer, to the stockholder, and to the employee—it can do so only by hard work and efficient performance.

In our belief, it is a necessary condition of achieving such efficiency that the system of private enterprise should continue. The achievements of British Industry have been due, in large measure, to that system. We do not think that the profit motive should be eliminated from our industrial and trading system. It is a deeply engrained characteristic, is certainly not the least of

Digitized by Google

the many incentives to good work and enterprise, and is common to all who derive their living from industry whatever position they may occupy in the industrial sphere. Any industrial system which left it altogether out of account would lose a vital part of its driving force. The motives of service and of profit are not mutually exclusive.

We pass now to the consideration of certain other factors which we consider to be essential to the full and healthy development of industry. They emerge from the conception, which we have just outlined, of a highly efficient industrial system organised upon a basis of private enterprise, and they are essential to its fulfillment.

Whatever form or structure any particular unit may take, management should be highly trained, skilled, and experienced; for success in industrial enterprise depends largely upon these factors and upon the individual manager being both willing and qualified to take responsibility. In our view the general standard of management in Great Britain can be still further improved, and every possible step must be taken to achieve that end.

For a period after the war the regulation of many types of imports and exports will be a matter for Government control, and measures such as the licensing system should continue for some time to regulate the movement of goods and the balance of payments. It will be necessary for the export interests of British Industry to secure more organisation and initiative within themselves as well as more effective governmental support. The cost of an efficient and permanent export service is considerable and to many independent firms prohibitive. Indeed, in the pre-war era the individual firm was constantly at a disadvantage in competing with other countries whose industries were organised for export and frequently had behind them also the active support of their governments. The wartime experience of export groups has underlined the importance of collaboration. At the same time, we cannot conceal our opinion that in this field industry generally has not in the past appreciated how high a degree of initiative is required under modern conditions. Despite many outstanding examples to the contrary, there was often insufficient attention paid to the individual requirements of overseas markets or to the importance of a personal knowledge of customers acquired on the spot.

The days are long past when British Industry could sell its products abroad easily by reason of its initial lead in industrial development. Other countries are now highly industrialised, and that process will have been inteusified by the war. We have no reason to complain of this development, but it is obviously a matter of the highest national importance that this country should earn its fair share of world trade in manufactures. We look forward to an orderly and co-operative plan between nations for dealing with questions of international trade.

Industry must recognize its social obligations in contributing to the work of physical reconstruction which will be necessary after the war. As an example, the siting of works and factories is a matter of public as well as private concern. There can be no return to the haphazard development of earlier days, involving as it did the disfigurement of the countryside, and industrial housing conditions which were no credit to the age. New industrial developments must conform to the requirements of any general regulations which Parliament, on behalf of the community as a whole, may lay down in order to preserve amenities, ensure the best use of the special qualities of particular pieces of land, prevent congestion, facilitate through traffic, and establish a proper balance between industrial and other areas. Industry is entitled to ask that the Government should not bring forward regulations of this character without having regard to the effects which they may have on costs and prices. Subject to that, industry itself should recognise the duty of going beyond the bare requirements of authority and doing all in its power to safeguard the social amenities of the country.

It is vitally important that the financial strength of industry should be conserved. We have already indicated the importance which we attach to the retention of the profit motive, but we would point out that the profit element cannot be measured solely from the angle of the dividends which are distributed. A clear distinction must be drawn between gross profits, part of which industry must retain for the maintenance and development of its own efficiency, and distributable profits which (limited by personal income tax and surtax) are received by the shareholders as income. Before the dividend stage is reached, industry must be allowed to retain and place to reserve adequate profits to provide for expansion and improvement. By the creation of sufficient reserves and the utilisation of these reserves in the business new capital is provided, research and development are financed, stability is maintained, and fluctuations of trade are

Digitized by Google

provided against, giving some assurance of continued employment and prosperity for staffs and workpeople.

In this connection the importance of ensuring that there is adequate disclosure and publication of the financial results of industry, both through the accounts of joint-stock companies, statutory corporations, etc., and through classified statistics collected by the Government, must be stressed. Such disclosure and publication will not only centre public attention on the relevance of these distinctions; they will also serve to create confidence in the financial management of industry and will dissipate any suggestion that "hidden profits" are being accumulated by industrial concerns to the detriment of the consumer and those who work for industry.

We have already stated that, in our view, industry should accept a code of obligations toward employees. We now proceed to set out more specifically and in some detail our approach to the practical problems which those obligations entail.

THE SOCIAL OBLIGATIONS OF INDUSTRY WITH SPECIAL REFERENCE TO LABOUR AND THE SOCIAL SERVICES

(1) *Trade unions.*—In the nineteenth century many employers resisted the claims of trade unions to recognition and only reluctantly accepted the principle of collective bargaining. But even at that time British employers were a generation in advance of employers in other countries, and for many years now trade-union recognition and collective bargaining have been the normal practice of managements in British industry.

We desire to see the authority of the trade unions strengthened within their own ranks and increasingly close collaboration achieved between them and management, so that they may, with a full sense of their joint responsibility to the public, examine problems affecting industry in relation to the community as a whole. Unless full and effective collaboration is achieved, the benefits which are owed to the consumers and the workpeople will be dissipated in disputes and friction. Just as in section III of this statement we outline further measures for the organisation of industry, so we should like to see the trade unions themselves take steps in the way of developing further arrangements between and within the various unions.

(2) *Works councils.*—We consider that labour in all its grades and sections should be brought into closer contact and association with the management. This aim can be assisted by the general adoption and extension of works councils and production committees already operating successfully in certain industries. The functions of these councils and committees would be advisory and consultative; they should in no way displace the trade unions as the negotiating bodies on questions of wages and conditions affecting the whole trade. Nor can they relieve the management of the responsibility for the conduct of a company's business and for taking all necessary decisions.

(3) *Duties to employees.*—Although we realise the impossibility of forecasting the conditions which will prevail at the end of the war, we are, nevertheless, encouraged to put forward the following aims as our suggestions for a code of duty toward employees. We would wish the provisions embodied in these suggestions to be a first charge on industry, to the extent to which they are matters for industry and not for the Government to carry out.

(*a*) *Opportunity.*—Every man and woman entering industry should be afforded the fullest possible opportunity of rising to positions of greater responsibilities, in any sphere commensurate with the capacity and energy which they show.

(*b*) *A minimum basic wage.*—Industry itself should aim at assuring to every able-bodied citizen engaged in industry and prepared to do an honest week's work such a basic level of wage as would afford a decent standard of life. Every opportunity should be given to supplement this minimum basic wage by the development of payment by results, and also by arrangements designed where practicable to enable the employees to share in the prosperity of their firms.

(*c*) *Unemployment.*—Short-period unemployment can never be wholly eliminated. There must, therefore, be provision for unemployment pay at subsistence rates and it must be clearly recognised that a man out of work through no fault of his own is entitled to a subsistence allowance as of right and not of charity. This must be coupled with an obligation to accept alternative employment elsewhere under suitable safeguards.

Government and local authority schemes of work which will have real national value can and must be prepared to relieve unemployment in periods of

Digitized by Google

trade set-backs. These schemes would be confined to public work, i. e., new roads, water supplies, housing, and the like. The equipment of industry with up-to-date plant and machinery, however, is as much in the national interest as public works, and industry will be entitled to obtain financial assistance for industrial schemes if our view is accepted that service to the community must be its first aim.

For alleviating unemployment the state might be called upon to take, on suitable terms as to interest and repayment, a share of what would be an uneconomic risk for private industry; or at any rate render available adequate credit, which is normally liable to be much restricted in these times. The forms of such assistance and the safeguards under which it should be given may vary from one industry to another, and it should be granted, in our opinion, only after consultation with the representative associations of industry which we hope to see enlarged on the lines sketched out in section IV of this memorandum.

(*d*) *National health insurance.*—Sickness and disability allowances should be such as to free the recipient from want when incapacitated from these causes.

(*e*) *Holidays with pay.*—Holidays with pay should be established throughout industry.

(*f*) *Hours of work.*—Reasonable hours of work should be agreed for all industrial workers according to the nature of their work and other relevant circumstances. Recent industrial experience has demonstrated that in many industries reduction of long working hours results in increasing the output of the individual worker.

(*g*) *Family allowances.*—We are in favour of a scheme of family allowances for children up to the school-leaving age. We have not attempted an examination of the various forms of family allowances, regarding this as outside our purview. We are of the opinion, however, that allowances should be at the same rate whether the parents are employed or unemployed; and that they should be paid through a state scheme, to obviate risk of men with families being prejudiced in obtaining employment.

(*h*) *Old-age pensions.*—Many industrial firms have, of their own accord, established pension schemes for their employees. This principle should be widely extended, so that contributory pension schemes operated by individual firms may serve if necessary to supplement State old-age pensions and thus enable everyone who has given long and good service to secure an adequate income on which to live when his working days are over.

(*j*) *Housing.*—An adequate standard of housing for all sections of the community is an essential element in social well-being. Normally it is our opinion that the housing of industrial workers falls into the category of "public works"; it may, however, frequently happen that there is no adequate housing accommodation adjoining an industrial site and that it is not being provided by a local authority or by private enterprise. We regard it as the ultimate duty of industry to ensure that its own employees are properly housed on reasonable terms.

(*k*) *Education* (*a*) *General.*—We have left to the end what is probably on a long view a vital subject, both for the nation as a whole and for industry, as an important element in the national economy—the subject of education. Many and difficult issues are involved in questions of educational reform, and we are not qualified to do more than indicate our general attitude towards them. We are in favour of the school-leaving age being raised to 16, though we realise that there may be practical difficulties in an immediate increase of the school population to the extent required by such a change.

We are also in favour of part-time compulsory education up to the age of 18. If arrangements are made for a reform of this character we consider that industry should make its contribution by suitably regulating the hours of work of juvenile employees.

We would emphasise that these advances will be ineffective, however, unless accompanied by a thorough overhaul of the whole educational system of the country and of the methods of training youth, with the two main objects of (1) giving equal opportunity to all, regardless of circumstances, who are prepared to take advantage of it, and (2) bringing the youth of the country to a full understanding and acceptance of the personal and national duties and responsibilities which, by heritage, are the right and obligation of every British subject.

(*b*) *Vocational.*—We consider that industry should give much more thought to schemes for industrial and vocational education, training, and promotion so that every employee with the requisite capacity may be able to fit himself for higher responsibilities. Implicit in any such schemes is the counterpart that

Digitized by Google

employees must share in a sense of their own responsibility, not only to their companies but to the community at large.

II. THE EXISTING STRUCTURES OF INDUSTRY

We have now stated both generally and, so far as is possible, specifically, the main principles which, in our view, should govern industrial activity in the fulfillment of its responsibilities. Before we pass to the measures required of industry in its internal organization to achieve these ends, it is necessary to review briefly the various forms in which it can at present operate and to discuss their appropriateness to the general conception which we have outlined.

We have already stated our belief in the system of private enterprise; it follows that, in our view, state ownership and operation is a system which would not succeed if applied generally. In this country it does not exist today in any sphere of productive industry. The post office may be quoted as an example of state ownership and efficient state operation. It is not however a manufacturing or trading business, but a statutory monopoly conducted on nontrading lines. The Royal Dockyards and the Royal Ordnance Factories may also be quoted, but they also are nontrading organisations and enjoy the advantages, if they do not have the complete form, of state monopolies. State ownership implies management by the civil service, which was not designed, and is not trained, to give the type of service required for the management of industry in general. By tradition, experience, and training it is designed for a wholly different administrative purpose.

These views have been reinforced by experience during the present emergency. Government control is necessary and possible in wartime, when the resources of the country are concentrated on a single objective, but we unhesitatingly take the view that its extension into times of peace, when industry has to meet an immense variety of continually changing needs, would be wasteful, clumsy, and destructive of development and initiative. The management of industry needs imagination, initiative, and an urge to lead in technical development. It also calls for a willingness to accept responsibility and risk, the ability to give quick decisions and the incentive to eliminate waste and achieve low costs of production. State ownership with civil-service control cannot be adapted to bring out these qualities. Moreover, there could be no effective appeal against inefficiency; on the contrary there would be the danger of industry becoming the plaything of party politics. For these reasons our belief is that any great extension of state ownership and operation to industry would so injure efficiency as to be a national calamity.

Statutory corporations.

State ownership must not be confused with corporations acting under a statutory charter or act of parliament, as do the Central Electricity Board, the London Passenger Transport Board, any many local undertakings. These undertakings perform services in which monopoly can be justified in the general interests of the community. In order to assist them to discharge their duties without embarrassment they are protected from competition and financial risk, in return for which security their stockholders accept a limited return on their capital. Their disadvantage, from the point of view of the public interest, lies not so much in the absence of competing enterprises in the same field, as in the power of these corporations to adjust their charges at the expense of the consumer to an extent necessary to render them self-supporting. It may be there is a direction in which this principle, suitably safeguarded against political interference, can be extended with advantage, but to apply it to industry in general would be a retrograde step which could not in the long run prove advantageous to the public.

Individual ownership and operation.

There are sections of industry which may best be conducted through the medium of small businesses. The advantages of personal direction and management are great. It is a method particularly suited to the national character. But, just as traffic is facilitated by the rule of the road, so we believe that national enterprise as a whole is aided if individualism is suitably regulated. It is essential that businesses owned and operated by individuals should continue to exist as an integral part of industry. Equally they should conform to the standards demanded by the social conscience of the times. They must be neither handicapped nor favoured in competition with other forms of industry, and they should have a voice in all industrial matters which may affect their interests.

Digitized by Google

Cooperative ownership and operation.

The cooperative movement owns substantial manufacturing capacity, which forms a distinctive section of industry. Unlike any other branch of industry, it is linked to, and controlled by, the cooperative system of retail distribution. Its importance and growth are of course related to the volume of trade which the retail societies obtain. Except for its link up with the retail societies and the special method of retail sales effected by those societies, the problems of the cooperative movement, so far as it is engaged in manufacturing operations, do not differ essentially from those facing other manufacturing enterprises, whether carried on under individual ownership or by large companies or combines. Accordingly, the cooperative movement must be expected to conform to any arrangements which are applicable to all forms of manufacturing industry, and as a corollary it should have a voice in all industrial matters.

Large companies and combines.

To produce certain types of commodities economically, large units are a necessity. In such cases, concentration of the available demand into these units is imperative if cheap production is to be obtained, not only for the benefit of the consumer in this country, but to enable our export trade to be maintained and developed in the face of competition from like units in other countries.

Industrial amalgamations are sometimes charged with abusing the strength of their position by retarding enterprise and invention, restricting production and either maintaining or raising prices unduly where price reductions are justified, thus exploiting the consumer instead of using their special efficiency to serve him. We do not deny that this is theoretically possible, but it would, however, be checked by public opinion and in addition would seldom pay, for in these industries cheap production and profitable working depend on large output. Properly administered amalgamations, commanding the services of technical, commercial, and financial experts and consultants provide in our view a more effective spur to efficiency than unchecked competition, which leads often to uneconomic investment and production and the final closing down of businesses through unprofitable trading, with all that this involves in displacement of labour. In general, industrial amalgamations have not taken unfair advantage of their position. When based on sound lines and well managed, they have been of great benefit to the consumer by using their larger financial resources to pursue an active research and development policy, thus enlarging business both at home and abroad. They have been able, by reason of their financial resources and technical efficiency, to put on the market a wide range of products in a way which could not have been done by small units, and at the same time to improve standards of wages and conditions of service and to facilitate the introduction of pensions and other schemes for the benefit of their workpeople.

Trade associatians and international cartels.

Trade associations play an important part in introducing a spirit of cooperation between those engaged in the same field, regulating conditions of trade, and eradicating unfair trade practices. They vary so much in their constitutions and functions that any wide generalisations on the subject have little validity. It cannot, however, be denied that trade associations can be operated merely for price maintenance, incidentally affording protection to the inefficient or high-cost producer, rather than for the general good. Such a policy must be unreservedly condemned as running counter to the prime duty of industry, which is to serve the consuming public, and must not be allowed to find a place in future industrial organisation. It should always be the aim of industry to maintain production and consumption at the highest possible level.

Cartels differ from trade associations in that they are international in scope. Where similar products are manufactured in different countries, these international agreements (which necessarily imply that the parties to them are able to speak for the major share of the industry concerned) are essential to keep production equitably allocated between countries and companies, in tune with the maximum world demand attainable. They exercise a stabilising influence against violent fluctuations and dislocating shifts of the currents of trade, and thus have an essential part to play in post-war reconstruction, when international economic cooperation for the general benefit will be of the highest importance.

III. THE CLOSER ORGANISATION OF INDUSTRY

We have previously defined the fundamental aim set before us in terms of a threefold responsibility to the consumer, to the employees, and to the stock-

Digitized by Google

holders. Within this triple responsibility we desire to stress the primary duty of industry towards the consumer. We therefore restate our aim as being to assure to the consumer the full benefit of constant technical progress reflected in higher quality or lower prices, or both, while at the same time establishing greater economic security for all than heretofore—security from violent fluctuations in employment, in the returns to industry, in the currents of domestic and international trade. So far as these fluctuations arise as an incident in technical advance and a rising level of efficiency, the gains they bring outweigh the cost, provided that wage earners are protected by an adequate system of unemployment insurance, and industry is allowed to prepare for them by accumulating reserves out of profits. But the insecurity is not all of this kind. Much arises from the uncoordinated action of competing firms; much from the lack of a wholly effective machinery for formulating and putting at the disposal of government a coherent and concerted picture of the experience and opinion of industry; much finally from fluctuations in domestic and international trade, which, however, are mainly beyond the control of industry itself.

It appears to us therefore to be an essential condition of progress that the relations between firms, between different industries, and between industry as a whole and government should be more fully and comprehensively organised in some form of permanent association. Otherwise there will continue to be loss and friction through forms of competition which are wasteful and uneconomic; the experience and knowledge of industry as a whole will not be mobilised as an effective opinion in questions domestic or international in which it is deeply and inevitably concerned; and it will be impossible to achieve the effective general application of the code which we believe to be essential.

In what follows we sketch out the sort of organisation which we have in mind, emphasising, however, that it is no more than a sketch and might well be modified, and substantially modified, as a result of closer and more detailed examination by the committee whose appointment we propose in the final section of this statement.

(1) The first step should be the classification of industries into sections, as has already been done in many branches of industry. The classification adopted should not be regarded as fixed and immutable, but should allow of elasticity, so that novel manufactures can be brought into new classifications or merged into existing ones.

(2) Each section should set up a sectional association which, operating where necessary through local or subassociations, would be charged with the duties of coordinating the activities and securing the collaboration of all producers in its own section.

(3) Sectional associations might in some instances be formed by adapting existing organizations, e. g., trade associations and industrial and export groups, where these existed on suitable lines. In other cases completely new sectional associations would have to be established. There would have to be a measure of uniformity in their constitutions, and these would have to provide for a proper system completely fair to all members, by which firms in any sectional association at fixed intervals elected their councils. Special arrangements to ensure the adequate representation of small firms would be necessary in the case of sectional associations, which might otherwise be dominated by the controlling position of one or more producers in their section.

(4) Sectional associations would be under the general direction of their councils, and would be assisted in the performance of their duties by a trained managerial and intelligence staff. The extent of the authority of these councils and the degree to which they would seek to exercise it are matters for further examination. It is clear to us, however, that what suited one section might not suit another. We do not, therefore, advocate anything approaching standardization in the operation of the councils or their sectional associations. What we desire is that each section, through its sectional association, should be able to organize itself with the following main purposes in view:

(*a*) To promote the production of a maximum output at the lowest possible price consistent with the adequate remuneration of labor and capital.

(*b*) To establish a greater measure of collaboration, both within the trade and with other sections of industry, in the interests of efficiency and therefore of service to the consumer.

(*c*) To encourage such forms of industrial competition as are conducive to the public interest; conversely to discourage wasteful and destructive competition.

(*d*) To establish contact with any bodies representative of the consuming public or sections of it and to take account of any representations which may

Digitized by Google

be made in regard to the quality or price of manufactured products or their methods of distribution.

(*e*) To adopt standards of wages and conditions of service which pay full regard, so far as lies within their power, to industry's aims as indicated in section I.

(5) We contemplate also that there be brought into being a Central Council of Industry, representative of the whole of industry. Such a council is needed to formulate the views of industry on questions transcending the limits of any one trade, especially questions on which different sections may take different views. In the transitional period from war to peace there will be particular need for the advice of such a body, and we would desire to see all the existing national associations and federations which represent industry brought into consultation together as early as possible on the right means of forming it.

(6) The Central Council of Industry should, when the plan is finally worked out, be a body elected at fixed intervals by the councils of the associations. We conceive that its functions would be:

(*a*) To maintain regular contact with the sectional associations.

(*b*) To maintain contact with the Trades Union Congress, especially so as to find means of giving greater expression to the high standards of mutual responsibility which industry and those employed in it owe to one another.

(*c*) To act on behalf of British industry in furthering international economic cooperation and the expansion of world trade.

(*d*) To give consideration, from the standpoint of industry as a whole, to other matters of high economic policy.

(*e*) To establish an intelligence service of the highest quality and to be the channel through which the views of industry on economic, financial, and social problems, and on world trade generally, can be communicated to the Government.

(*f*) To recommend to the Government changes which seem necessary in existing industrial and social legislation, and to act generally as the medium for making proposals to the Government on matters which from the standpoint of industry appear to require executive action.

It will be observed that the Central Council of Industry, among its other functions, would act on behalf of British industry in furthering international economic cooperation and the expansion of world trade. This connotes that while our primary duty is to put our own house in order, we do not disregard the problems ahead of the country in its future relations with the Empire, United States, Russia, China, and other Allied Powers. These relations will have far-reaching consequences in which Great Britain is vitally interested. We consider that this Central Council would provide a medium for the representation of industry as a whole, as it would be in contact with the greatest proportion of production in this country.

(7) This Central Council of Industry will require considerable organisation. It will need to work through subcommittees, and, if it is to function successfully as the body representative of British industry, will require a trained managerial, intelligence, and secretarial staff qualified to act as the general staff of industry.

These several organisations (with the assistance of their trained and experienced staff) would afford to the various trades and units which make up the whole the opportunity of pooling knowledge, of joint consideration of important common problems, and of the systematic formulation and presentation of a policy on such problems.

But such a plan would have a limited usefulness only if a considerable number of firms did not join the sectional associations, or, having joined, accepted such privileges as might accrue from membership while declining to accept any corresponding duty to accept majority views. It particular, it would be impossible in such circumstances to be sure of avoiding the waste involved in uneconomic competition, and impossible to be sure of securing a general application of the code which we have recommended in relation especially to labour and the social services.

It is necessary for this reason to consider whether, and if so to what extent, the associations and the councils should be given specific powers (of course within prescribed limits) to make regulations and to enforce decisions, and whether membership of associations should be made compulsory.

This is a subject of far-reaching implication and one upon which specific proposals must not be lightly made. We propose that the whole question of the further organisation of industry should be remitted for close study to the committee whose appointment we recommend. We must, however, add here that if as a result of that study the committee should find it necessary to make recommendations which involved the granting of compulsory powers to associations and councils, such powers would need to be subject to proper safeguards.

Digitized by Google

In the first place, the granting of such powers, their form and scope, and their continuance, would, of course, be a matter for the determination of Parliament. We do not for a moment contemplate any final devolution upon the representative bodies of industry of legislative powers which properly belong only to Parliament. Inasmuch as rule-making authority might be delegated to any such bodies, it would in our view be right that such rules should not become operative without Parliamentary authority.

It is a cardinal point in our proposals that ample provision should be made for the protection of the public as consumer.

We are fully alive to the fact that any proposals for the reorganisation of productive industry, especially if they visualize the possibility of it being granted compulsory powers, would, in the absence of such an assurance, be open to the criticism that it was an attempt on industry's part to assume dictatorial powers. A study of this document should make it clear that nothing is further from our intentions.

We consider it would also be necessary to provide means by which any individual firm could appeal against decisions of sectional associations or the Central Council of Industry, or against regulations which those bodies proposed to make. We have in mind particularly the special needs and interests of small producers, which without some special provision for appeal might well appear to run the risk of being swamped by the interests of larger and more powerful undertakings.

It appears to us that such needs might be suitably met by the setting up of an Industrial Tribunal or Commission. This would be in the nature of a final court of appeal on all industrial matters and would be appointed, not by industry itself but by the Government. The powers and duties of such a tribunal, which would be generally in the nature of an impartial judicial body, would again be a matter for final determination by Parliament. We need only say that for our part we regard the general function of such a body as being to ensure that the organisations of productive industry should function properly and that any powers accorded to them should be impartially exercised so as to afford full protection to the consumer and to the small producer as contrasted with the larger producer. We recognise that many difficult questions will be met within the creation of such a tribunal. If we do not deal with them here at length, it is because they are questions which require detailed study and are finally for Parliament rather than for industry to pronounce upon.

IV. APPOINTMENT OF A COMMITTEE TO FORMULATE DETAILED PROPOSALS

(1) Whoever attempts now to discuss post-war problems is in danger of falling between two stools. If he is specific in his approach it may well be urged that he is legislating for conditions which are largely unknown; if he is general it may be said that his contribution is platitudinous and therefore valueless. The difficulty is inescapable and must be accepted. The one fatal thing would be to do, and to think, nothing.

In this memorandum we have tried to find a reasonable middle way. We do not claim to have put forward a solution of all the problems with which industry and the community are jointly faced, and we would stress that the proposals sketched in this interim statement need to be examined, developed, and elaborated. We maintain, however, that if industry could be fully organised on the lines we have indicated, it should be possible not only to achieve greater economic security and a higher standard of life for the whole people of this land, but to ensure that all who engage in industry are made aware of their clear responsibility for conducting industry in accordance with the needs of the community—in other words, in accord with a national conscience.

(2) Having issued this statement we should fail in our duty if we did not take immediate steps to see that our suggestions are more fully examined and developed. With this object it is proposed to appoint a committee to examine the suggestions in detail and to submit a report. This report will specify the forms of organisation that need to be developed if our general aims are to be carried into practice, the functions which should be allotted to such organisations, and the general framework within which they should operate. The committee will be instructed to confer with the existing national industrial organisations, in order that it shall not lack the benefit of their wide experience and shall be assisted in arriving at conclusions which shall be thoroughly representative of industry. It is hoped that these bodies will give their active assistance.

(3) In publishing this statement now, we are actuated by a double purpose. We wish first that the public shall see the steps which the signatories propose, or-

Digitized by Google

recommend shall be taken, to improve industry's effectiveness for giving service to the community. Secondly, we shall welcome any views or opinions on the report which members of the public or other bodies, including representatives of labour and of the cooperative movement, may think fit to offer.

(4) Finally, we well understand that some of our suggestions are controversial and that we cannot expect to find general acceptance of what we have said. In particular the form of industrial organisation we have suggested, and our reference to the possibility of investing those organisations with a limited degree of compulsory powers might, if considered out of the general context, give rise to apprehensions that we had in mind the establishment of an industrial system controlled by large and monopolistic corporations, enjoying a considerable measure of self-government, and capable therefore of exploiting the consumer, labour, and the small producer. This is not so. It is precisely because our intentions are wholly different that we have in this document laid emphasis on four principles: (1) That the primary duty of industry is to the consumer; (2) that industry should acknowledge, by accepting a code of performance towards the workers, the partnership of labour in industry; (3) that in any sectional or central organisation of industry special steps should be taken to safeguard the interests of small producers; and (4) that whatever form the further organisation of industry might take the matter would be, and would remain, one for the determination of Parliament. We have no desire to see any radical change in the constitutional relationship between industry on the one hand and the Government and Parliament upon the other.

A. R. SMITH, *Secretary*,
C/o Messrs. Thomson McLintock & Co.,
Granite House, 101 Cannon Street, E. C. 4.

NOVEMBER 1942.

SIGNATORIES

P. J. Adie, Sir Arthur Aiton, Sir William Alexander, D. A. Anderson, R. Barlow, Sir Edward Baron, D. W. Barrett, Sir Samuel Beale, J. E. Bennett, H. H. Berresford, J. F. Bostock, F. J. E. Brake, D. Brown, R. S. Brown, Sir Nigel Campbell, A. D. Carmichael, H. M. S. Chalmers, K. M. Chance, P. B. W. Charnaud, W. B. Chivers, A. Clark, J. O. M. Clark, W. A. Collins, C. B. Colston, E. H. Cooper, Sir Richard Cooper, H. J. Cotes, A. Crawford, Sir Valentine Crittall, Hon. G. Cunliffe, G. Cunningham, G. Dennison, W. C. Devereux, The Earl of Dudley, R. Duncalfe, H. Durston, A. Dyson, D. O. Evans, V. Z. de Ferranti, Lord Forteviot, J. Foster-Smith, D. Frost, L. C. Gamage, E. H. Gasking (Mrs.), Sir Frank Gill, E. H. Gilpin, E. W. Goodale, Sir Allan Gordon-Smith, R. Gordon-Smith, Sir John Greenly, C. K. F. Hague, G. A. Hancock, B. Harvey, C. G. Heywood, P. E. Hill, Sir Robert Hilton, Lord Hirst, G. N. Hunter, F. T. Jackson, J. E. James, G. C. Jenks, Sir Ernest Johnson, Sir W Benton Jones, Sir Francis Joseph, W. Kilpatrick, F. A. King, G. B. King, A. C. Kingham, G. H. Latham, Sir W. Clare Lees, E. H. Lever, P. Lindsay, J. C. Lloyd, A. C Macdiarmid, Lord McGowan, A. McKinstry, A. S. MacLellan, J. O. Martin, J. B. Mavor, Lord Melchett, J. R. Menzies-Wilson, Sir Percy Mills, T. D. Morson, W. T. Munro, A. Nathan, C. S. Newton, J. G. Nicholson, G. W. Odey, G. Parkes, W. Paterson, Lord Perry, A. E. Phillips, A. R. Porter, G. B. G. Potter, Sir W. Prince-Smith, A. H. Railing, J. V. Rank, C. W. Reeve, E. Robson, S. T. Robson, Sir Alexander Roger, N. H. Rollason, A. A. Rose, Sir Frank Sanderson, Lord Sempill, G. H. A. Sington, H. Smith, J. Southern, G. A. Sowerby, T. G. Spencer, R. F. Summers, J. A. Tait, H. Tomkinson, D. W. Turner, E. T. Walker, F. Wallis, Sir Cecil Weir, G. V. Wellesley, R. S. Worth, F. Wright.

EXHIBIT NO. 6

STATEMENT OF HON. THURMAN ARNOLD, ASSISTANT ATTORNEY GENERAL OF THE UNITED STATES, BEFORE THE SENATE COMMITTEE ON PATENTS, JULY 31, 1942

I appear before this committee to present a bill to correct those pressing patent abuses which have so disastrously affected our war effort. Through these abuses a vital segment of American economy has been strait jacketed into a foreign cartel system, and the free flow of strategic materials vital for war and for internal security has been impeded and delayed.

Digitized by Google

This committee has a peculiar responsibility—it has investigated the patent system at a time when it was never more important that we have full and unhampered production and that American business be entirely free of either old or prospective commitments to cartels. Today, largely through the work of this committee, we have learned that the production and distribution of vital elements such as magnesium, zinc, rubber, aviation gasoline, beryllium, titanium, electrical equipment, plastics, dyestuffs, tungsten carbide, and a variety of other products necessary for our war effort as well as our industrial well-being have been seriously impeded and delayed and in some cases totally blocked by patent restrictions.

From the evidence taken before this committee two evils stand out with startling clarity, demanding an immediate remedy. First, we must act to prevent patents from being used to destroy independent business and exploit the consumer at home. Second, we must act to prevent secret patent cartels from controlling our foreign economic policy abroad.

It is too clear to require an argument that international and domestic cartels have victimized American business on an increasing scale for the past 20 years. To these cartels we owe our failure to develop light metals, chemicals, and plastics before the war. To them we owe our present shortages of many essential war materials. These cartels have victimized big business as well as little business by holding back new technologies until they were in a position to control them and prevent them from threatening their domination of the market. It has taken the intense effort of the war to jar these cartels out of their entrenched antiproductive positions.

In the field of foreign economic policy international cartels have erected secret protective tariffs, divided foreign markets, and aided our enemies, not intentionally but because of their willingness to make any sort of alliance to avoid competition and to dominate or secure the domination of the market. Germany was able to take advantage of this cartel system because of its regimented control of all industry. It deliberately used cartel power to further German economic penetration, and to disarm the democracies. Hitler made it a criminal offense to give either inventions or information as to inventions to foreign powers without submission to a Government agency. Hence we got only what Hitler decided he wanted us to get. We gave whatever was necessary to further the selfish interests of private groups.

There are two problems before this committee—one, the problem of patent reform, a technical problem involving endless debate; the other is the immediate problem of curbing restrictions on production by those who use the patent privilege as an instrument of business policy rather than for its constitutional purpose—to promote the progress of science and the useful arts.

I am not here addressing myself to the problem of overhauling the patent law itself. Of course it should be studied. As long as we have a patent system it will require reforms from time to time. But I am concerned here only with the immediate problem of preventing any patent law, reformed or unreformed, from slowing down the production of our Nation or turning over the control of either domestic or foreign commerce to any powerful private minority.

The remedy for this evil is not technical. It can be simple in design following the established principles by which we have always protected free enterprise in this country. It can be made as clear to the layman as to the technical lawyer. And the solution of that problem must not wait, because we need it now. It consists simply in preventing the use of patents as an instrument to suppress competition, restrict production, or destroy independent business on a scale that substantially interferes with the distribution of any commodity. Every other privilege given to industry or to agriculture is curbed by the enforcement of this remedy today. There is no reason in common sense or theory why the patent privilege should remain, in definance of the Constitution, a protected game preserve for the predatory animals of monopoly power.

My proposal is to curb the illegitimate use of the patent privilege. Therefore, I will give a brief description of what most people would agree are proper uses of a patent. Under that constitutional privilege I think that the limited monopoly of a patent can be legitimately used in the following situations: The first is where the attempt is to obtain the maximum royalties for the inventor by widespread licensing. The second is where licenses are refused in order to give a struggling infant enterprise a chance to get on its feet and compete with powerful units already established in the industry.

But where licenses are refused or restricted in order to give a dominating industry a chance to hold down production or to give a patent holder a power

Digitized by Google

substantially to control the market for any commodity, the Constitution provides no justification. Patents were never intended to be the keystones to support industrial empires. When we permit it to be so used we delegate power over Congress to a powerful minority without public responsibility, in defiance of the Constitution.

The remedy is simple. We do not need to reform the patent law. All we need to do is to define the abuse of patents I have just described and penalize it.

The bill I propose therefore strikes only at those patents which have been so abused as to limit unreasonably the supply of any article in interstate commerce. Patents which are found by the courts to have been so misused will be canceled.

Briefly, the bill provides as follows: First, no infringement action can proceed without having a copy of the pleadings served upon the Attorney General who has the right to intervene. Second, any use of a patent, including any unreasonable failure or refusal to grant licenses thereunder, which has the effect of unreasonably limiting the supply of any article moving in interstate commerce is declared to be illegal, and a judgment or conviction that a patent has been so used renders the patent null and void. Third, the criminal penalty for such misuse of a patent is made inapplicable where prior full disclosure has been made to the Attorney General. Fourth, all patent assignments and licenses must be in writing with a copy filed with the Attorney General.

I will proceed to explain the effect of these provisions. I start with section 3 because it is the most important. It adds a new paragraph to section 1 of the Sherman Act. It makes illegal the use of any patent which has the effect of unreasonably limiting the supply of any article in interstate commerce. It permits the Attorney General with appropriate safeguards to cancel a patent which has been so used.

The effect of section 3 is to subject the patent privilege to the same penalties and hazards which now curb the use of every other privilege of combination or limited monopoly. Take, as an analogy, the relationship of the Sherman Act to the law of incorporation. The corporation franchise is even more important to efficient organization of industry than the patent. It permits corporations to be formed, to merge, to have subsidiaries, to make agreements not ultra vires. Yet when a private group takes advantage of the numerous opportunities offered by our laws of incorporation to dominate the market, the corporation will be dissolved under the Sherman Act.

The Sherman Act, in determining whether or not a corporation or combination of corporations will be dissolved does not concern itself with the method, but with the economic result. Where an economic result has been obtained which unreasonably restrains commerce the corporations will be dissolved, even though the use of that device would have been proper on a small scale and for different purposes.

There is no reason, either in logic or in equity, why patent privileges should stand on a different footing. Actually the patent privilege happens to be only one of a long list of privileges which have been abused in the interest of monopoly power and restricted production. When the act was passed the most common device for this purpose was the common-law trust, and thus the antitrust law got its name which has stuck long after this device was abandoned. The long years since 1890 have produced numerous other Trojan horses to conceal organized oppression of independent enterprise. Each has been legal on its face. Thus, the trade association became an instrument of coercion; the innocent-looking publication of statistical data became a way of dividing the markets; even codes of business ethics have been used to restrict production and crush competition. All of these privileges can be taken away when their abuse is shown. Section 3 subjects the patent law to the same penalties.

There is imperative reason why this should be done today. No privilege has ever been subjected to such abuse by great corporate rackets as the patent privilege. There are three reasons why it made an excellent smoke screen for monopoly power. In the first place, it is surrounded with legal mystery making the real problem difficult to present to the laymen. In the second place, the sentimental regard which the public rightly has for struggling inventors gives the corporation which pretends it is a struggling inventor a certain public appeal. In the third place, through a perversion of the purpose of the patent law, the patent privilege has been considered as property, while no one thought of the right to form a trade association or a corporation as property. Thus a fanciful difference has grown up between the dissolution of the corporation and the cancelation of the patent. This difference is removed by the proposed bill.

84949—43—pt. 1——7

Digitized by Google

There is nothing wrong with the fundamental principle of our patent laws. The idea of protecting inventors and those who invest in invention furthers a just purpose designed by the Constitution "to promote the progress of science and the useful arts." The Constitution goes on to say how that purpose shall be accomplished, to wit, "by securing to authors and inventors the exclusive right to their writings and inventions for a limited time." The suggested bill is in no way a derogation of that fundamental principle.

The purpose of the bill is twofold: (1) To put a real penalty on the abuse of the patent privilege to violate the very purpose for which it was created; (2) to take away from an illegal combination the weapons which enabled them to build up and maintain that combination against independent enterprise.

This is not a new principle. The same curb is put on practically every other business privilege.

Safeguards against the cancelation of the patents in the hands of owners who act in good faith.—Section 3 denounces the use of any patent which has the effect of unreasonably limiting the supply of any article in interstate commerce. This is not a rule of thumb. Indeed the great virtue of the Sherman Act is the fact that the absence of the rule of thumb permits each industrial situation to be considered on its facts. In putting a curb on unreasonable restraints it assumes that every great corporation knows enough about its own industry to realize when it is skating on thin ice.

Nevertheless, since the line between reasonable and unreasonable control over the supply of a commodity is not sharp, the bill provides a safeguard for those who act in good faith. It enacts into law a prosecution policy already adopted by the Department of Justice, by providing that, if a full and complete statement of the facts of any patent policy is submitted to the Attorney General in advance, the penalties of the bill shall not apply. In such a case the Government is restricted to its right to enjoin.

In this way a patent holder is given the opportunity of finding out whether his patent policies are such as to create a risk of cancelation of the patents themselves. And, further, in the event of disagreement with the opinion of the Department of Justice he is given an opportunity to test his policy in a civil action which involves no hazard whatever.

This sort of procedure, as applied to the corporate franchise, is illustrated in the *Appalachian Coals case*. In that case a group of corporations formed a marketing association to get better prices and a more orderly market for its members. This was obviously a restraint of trade. The only question was whether that restraint was reasonable. The plan was submitted to the Government. It was condemned. Civil litigation followed.

In declaring that the marketing agency was a reasonable restraint of trade, Mr. Justice Hughes considered two factors: (1) The keen competition which existed in bituminous coal, (2) the very limited control over the supply of that commodity which the marketing agency had power to exercise. Because of these two factors he held that the combination was reasonable. Nevertheless he ordered that the case continue on the docket so that if, in the future, the power of the combination should grow and dominate the market, the Government would have the opportunity at some future time to dissolve it, without criminal penalty.

Let us apply the same principle to patents. Suppose you had a patent on a superior fountain pen. So long as there were plenty of other fountain pens on the market, so long as you were not in the position to artificially control fountain pens your patents would be in no danger under the proposed bill. When, however, either by a patent pool or by a single patent, you obtained substantial control over the market for fountain pens so that the power to restrain production and raise prices of that important consumers item, you would run the risk of patent cancelation. At the same time you would have the privilege of submitting your patent policy to the Department of Justice when you felt that you were running close to the line so that that policy might be given the test of performance offered by the *Appalachian Coals case*, without the risk of penalty or cancelation on the part of the patent owner.

If this submission were made in advance and it was determined that your domination of the commodity was unreasonable you would be compelled to issue such licenses on such terms so that domination would not continue. Only if you pursued an aggressive patent policy in secret, without submitting it to the Government would you be in danger of the penalties of the bill.

This method of penalizing the unreasonable use of patents provides a flexible principle which can take into account the difference between different industries.—The great advantage of the Sherman Act is that it allows us to proceed

Digitized by Google

on the case by case principle. It does not compel us to forecast a vast array of hypothetical cases and provide for them in advance. It does not compel us to treat dissimilar cases by the same rule. The steel industry is different from coal. Coal is different from drugs. No workable rule can be formulated to attempt to apply the same principle to both.

Unreasonableness of restraint depends upon the industrial situation, the structure of the industry, the potential danger to independent enterprise under existing conditions. All of these factors can be developed and decided by the case by case method under the Sherman Act. They can never be forecast by any set of definitions.

Indeed the essence of bureaucracy is the attempt to put industry in a strait jacket of hypothetical principles formulated in advance and applied with rigid logic and consistency. The essence of industrial democracy and economic freedom is the development of law, case by case, and in the light of the particular circumstances of each case. The proposed bill is an attempt to apply this case by case technique in common law to the unreasonable use of the patent privilege to restrain trade.

Let me give an illustration of the necessity of this case-by-case approach in determining the reason of any restraint of trade. The growth of chain stores has put independent retailers in a disadvantageous position because of the advertising power of these great combinations. To meet this disadvantage independent retailers often pool their funds in a cooperative advertising campaign, offering special sales at which named commodities are sold at a special price. Of course, the members of such a cooperative advertising effort determine the sale prices they advertise. Is this unreasonable restraint of trade? No possible rule can be made in the abstract. If the cooperative advertising effort is large enough to substantially dominate the market, it is bad. However, if it is necessary to enable independent retailers to compete, it may be reasonable. The size and power of the chains, the character of the advertising, the quantity of goods they sell in the particular locality, are the determining factors under the case by case approach of the *Appalachian Coals case.* If a mistake is made by the Antitrust Division in declining to prosecute in any locality, it can always be corrected by civil proceedings without penalty provided the advertising plan was submitted in advance, but no general rule of thumb can possibly be laid down.

I cite as example another case. Recently the Antitrust Division told two small steel corporations that if they merged no criminal prosecution would be instituted. It did not approve the merger. It simply gave it the test of performance in the *Appalachian Coals case,* taking into consideration the fact that the large steel companies now control 90 percent of the industry. It told the small concerns that in the event of a civil suit being started in the future not only their own combination but that of the larger steel companies would be part of those proceedings. If the mistake was made it can be corrected. In the meantime business is going on.

But no possible rule of thumb could be formulated which would apply both to the steel industry and to the cooperative advertising ventures.

The same principle applied to patents. We should consider tthe reasonableness of any patent policy according to the situation of the industry that adopts it.

So much for a general destruction of the purposes of the bill, which centers around section 3. I will now take up the various types of patent abuse disclosed by this committee and show how the bill gives an effective remedy for each one of them. In this discussion the reasons for the other sections of the bill will become apparent.

1. *The patent blitzkrieg.*—I take this name from the files of the companies under investigation. It is used to describe a campaign of infringement suits. A great patent cartel is able to employ an army of counsel. It can take advantage of the endless delays possible in any litigation. It can sue customers of weaker concerns and thus destroy this business. Whatever the theory may be, the fact is that any shaky patent in the hands of a dominant group is sufficient to coerce and intimidate an entire industry through the use of the patent blitzkrieg. Banks will not lend money while infringement suit backed by such force is threatened. Customers are scared away; business goes to pieces. The illustrations are countless. I choose only two. The first is found in the reports of the Temporary National Economic Committee.

Here was a case where a prosperous concern doing $800,000 worth of business found itself bankrupt because it declined to sell out to the Hartford Empire patent cartel at the price set by that aggressive monopoly. I quote from the testimony

Digitized by Google

of the treasurer of the Amsler Morton Co. in the middle of that battle:

"Q. Can you tell me how much the * * * (patent) litigation cost your company?

"A. Well, it was tremendous for a small concern.

"Q. How much was it?

"A. It amounted to close to $70,000 and that doesn't take into consideration the expense of our organization.

"Q. I would like to ask you this: You told us, I believe, that you have sold only one lehr so far this year?

"A. That is correct?

"Q. That you sold no lehrs last year. What would you say the value of the glass-manufacturing machinery business is now? That is, your business.

"A. I will give you a comparison. In 1928 we were doing $800,000 worth of business and last year we had $18,000 worth of business in the glass industry—quite a drop."

The files of the Temporary National Economic Committee reveal another case where an independent concern attempted to manufacture milk bottles. I quote from the testimony:

"Mr. COLEMAN. We naturally were finally forced to hire a patent attorney. We had to acquire the services of a Texas attorney, and I think there are some two or three patent attorneys in the State. They brought us into court in April of 1935, as I recall. Well, when I arrived in San Angelo and met them there in the hotel, I can conservatively say there was a half trainload of attorneys and equipment. There were motion-picture projectors and attorneys all over the place. I don't know anyone of the Hartford legal staff that was not there. They were prepared to give us a nice battle. Well, I had only one attorney and he was considerably lost in that crowd. I wish you might have seen his face that morning. So I promptly asked for a recess until the afternoon, in order to see if we couldn't settle the case out of court.

"Mr. Cox. Did you settle the case out of court?

"Mr. COLEMAN. We were able to settle the case out of court; yes, sir.

"Mr. Cox. What were the terms of the settlement?

"Mr. COLEMAN. We received $10,000 in cash and were allowed a 6 months' license on the milk bottles which we paid royalty on at that time for that 6 months' period. At the end of that period we were to ship these two feeders back to the Hartford-Empire Co."

The patent blitzkrieg is found in many industries, including radio, chemicals, metals, optical goods, and electrical goods.

The oppressive use of infrigement suits is the heart of cartel domination. It is the weapon by which shaky patents are made effective methods of control. The bill automatically puts anyone who brings an infringement suit under the immediate supervision of the Antitrust Division. It takes away none of his rights if the suit is well founded, but it subjects him to an immediate penalty if the court finds that the patent has been abused. The small businessman no longer has to fight an oppressive and unjustified suit alone. He is given the protection of the research and the personnel of the Department of Justice if his defense appears to be well founded.

2. *The "umbrella" patent.*—I use this term to describe a patent so broad that it really covers an industrial idea. The most famous "umbrella" patent was the old Selden patent which for a time blocked the development of the automobile industry. The Selden patent in effect covered the idea of an automobile. Under this patent automobile manufacturers formed a tight association to exclude outsiders. In one case the buyer of a car was sued under this patent for running his own automobile. Of course, under such tactics everyone was forced into the association or destroyed. Henry Ford was excluded and it was only his persistence and financial ability that enabled him to break the ring.

Such patents are a menace to productive industry. Unless they are curbed by Government intervention it is only in the case of a lucky accident that they do not grow to dominate the industry.

In the case of hard board one of these "umbrella" patents was used to destroy all the independent enterprise which existed and even to prevent new types of hard board from being manufactured. This patent was so broad that it included the idea of making hard board from any vegetable substance with fibers.

There may be a legitimate reason under the present confused state of the patent law for the issuance of such patents. If you do not today take out a patent on everything under the sun, some patent expert is liable to get one and sue for infringement. The testimony of Edsel Ford before the Temporary Na-

Digitized by Google

tional Economic Committee shows that Ford was compelled to take out patents in order to ward off litigation.

This bill permits umbrella patents to be used for such protective purposes. But if they are used as instruments of aggression not only the umbrella claims but even the control invention will run the risk of cancelation. And, further, the Government is given notice of the beginning of a patent blitzkreig so that it can stop it in time.

For example, in the *Masonite case*, the Government after long investigation unearthed the outrageous patent policies which were condemned by the Supreme Court. But this was "locking the door after the horse was gone." Domination of the industry had already been achieved. The Masonite patent is still in the hands of the aggressor to be used the next time the Department of Justice goes to sleep.

Giving notice of infringement suits would put a positive obligation on the Department of Justice. Failure to fulfill that obligation would require accounting and explanation. And, further, it would put such a hazard upon the commencement of one of these suits for purposes of monopoly domination that it is unlikely that many would be brought.

3. *The accordion patent.*—Long ago the Supreme Court of the United States made illegal the sale of a patent license conditioned upon the use of unpatented goods. To meet this emergency the patent bar devised what I call the accordion patent. A good example is found in the *Univis case*. In that case the invention, if any, consisted in the position of a lens segment in bifocal spectacles. However, this invention was not patented. Instead, the Univis company got a patent on the finished spectacles. They then claimed the right to control not only the invention but the unpatented techniques of grinding and polishing and fitting the frames on the customer's face.

The bill would rob the accordion patent of any value except the protective features of such claims to avoid the infringement suits of others.

4. *The Bottleneck patent.*—Occasionally, a man may invent some gadget necessary for the efficient operation of an entire industry. If he is lucky enough to create such an important invention he may make all the money he pleases provided he does not act as a dog in the manger in holding up the techniques of the industry.

An actual case of this sort is found in the hearing on the Dzus patent before this committee. It is a patent on a small screw, necessary to complete an airplane. The owner refused to license any competitor to make them. The supply got short. Airplanes were held up on assembly lines. Aviation companies were protesting. All Dzus would do was to give temporary licenses, not to competitors but to his customers, and these were to be revoked in the future the moment Dzus could supply the screws himself. Of course, no one could go into manufacture under those conditions and no one did, although one of the airplane companies attempted to make the screws by hand in order to avoid buying expensive machinery which Dzus would control in the future. Nevertheless, airplanes stood still on assembly lines while Dzus attempted not to get royalties on his patent but to maintain control by refusing to license. There were other patents but Dzus' position was strong enough actually to hold up assembly lines in the time of war.

In the *Ethyl case*, the industry was dominated by two bottleneck patents, one the right to mix ethyl fluid in gasoline, and the other, the right to burn it in cars.

This is the kind of thing that no sensible man ought to tolerate. Struggling inventors ought to get protection, but not domination of any commodity. When they find themselves in that position, they should either stop their dog-in-the-manger tactics or risk the cancelation of their patent for using it unreasonably in restraint of trade. And whether they are using it unreasonably should be a question of fact, in the light of all the circumstances and not of theory. Otherwise, a patent issued to promote the progress of science and the useful arts becomes a weapon to slow down production in order to establish future monopoly control.

5. *The patent pool.*—The patent system in the United States was conceived during a time when manufacturing was a relatively simple thing. Thus patents came to cover entire devices. As our technology became more complex, patents came to cover only parts of machines and instruments so that very often several individuals owned patents covering the various functions of an individual machine. This resulted in what has been called the patent impasse. The various parties could either buy each other out or form a patent pool.

Digitized by Google

While the patent pool was at first devised to break an impasse, it took on additional features, for one thing, the members of the pool generally decided to keep others out unless they would abide by the rules and regulations concerning prices, production, and division of markets. Anyone who attempted to operate independently faced the combined strength and resources of the pool in litigation. Further, the power of the patent pool is such that once it exists its power increases enormously. It snowballs into the further acquisition of everyone else's patent rights, and crushes anyone who stands in its way. I quote from the statement of the patent attorney of Standard Oil:

"All manufacturing patent licenses of licensees will help to build up licensors' dominating position, but no licensee will get the benefit of any other licensee's manufacturing patent rights. In other words, this is not a cross-licensing arrangement, but one in which the patents are piled on patents in the hands of one centralizing company."

Another device which exists in connection with the organization of patent pools is the patent settlement—often an attempt to hide the illegality of the arrangement under what appears to be bona fide litigation.

The size of these patent pools in recent times has become enormous. Thousands of patents are found in the Standard-I. G. patent pool; over 15,000 patents are in the General Electric, A. T. & T., and R. C. A. patent pool. In fact, it is from these huge resources of patent pools that the umbrella patent, the blitzkrieg patent, and the bottleneck patents find their most fertile soil.

When there is an underlying understanding, even the issuance of separate licenses may be merely another way to cement what is in effect a patent pool. Thus, the dealing out of patents to separate American businesses, who then license according to a prior understanding, is only different in form than the holding of all of these patents in one centralizing company.

At present the law relating to patent pool—and particularly the patent settlement—needs clarification. Pools are not illegal per se. Often they are necessary for protection of struggling industries against infringement suits. Combinations of patents may be required to complete a finished product. Litigation settlements in themselves are favored by the law.

The bill clarifies the difference between an illegal pool and a proper combination by imposing the test of market domination. It makes discovery of that domination inevitable by requiring notice of every infringement suit.

I believe that the patent pool problem will be solved by the hazards placed on unreasonable conduct by the proposed bill.

6. *Licenses which restrict use.*—The character of invention today is such that developments in one field have applications in another. Instead of utilizing inventions to the full, it has been to the interest of the variety of patent-owning groups to channel these developments by restricting the use to which the process may be put. Thus, in the organic chemical field, the process which makes butadiene an essential of synthetic rubber is also capable of making aviation gasoline. I. G. Farben, however, was able to narrow Standard Oil's rights to the process for the use only in gasoline. In the glass container industry, the patents group, by limiting the use to which the patent machinery could be utilized, were able to create monopolies in beer bottles, milk bottles, and prescription ware, thus eliminating competition even among members of the patent pool. Another example of such a limitation was restriction placed by I. G. Farben on the use of a process to manufacture hydrogen and carbon monoxide. The process could only be used to manufacture ammonia for agricultural fertilizers and, therefore, could not be used to manufacture nitric acid, to be used in the manufacture of T. N. T.

The Department of Justice believes that licenses which restrict the use of any commodity are today illegal. Nevertheless, that principle is still to be tested in court. Clarifying legislation is needed to avoid protracted and expensive litigation.

The question of whether a license can be given to one person to use the process to manufacture one article and to another person to manufacture another article is one that is arguable if such licenses are used to protect struggling new industries. Where, however, the restriction on use is employed by a dominating corporation to further an unreasonable restraint of trade, it is a plain violation of the fundamental principle of the Sherman Act and a legislative declaration of that fact is imperatively needed.

The bill would protect any licensee who was sued because he refused to comply with an illegal license by bringing the Government immediately to his aid.

7. *Licenses which restrict production.*—The purpose of the patent system is to

Digitized by Google

promote science and the useful arts. There is hardly any restriction imposed by a patentee more contrary to the purpose of the patent law than the restriction of production. This is a planned scarcity in order to maintain a rigid market. Later I will mention the Rohm & Haas restriction on the manufacture of plastics. This permitted du Pont to manufacture only 50 percent of Rohm & Haas' production. In the glass-container industry each company is given a quota which it dare not exceed under penalty of losing its license. The incandescent-lamp industry has long suffered from this type of restriction. Each licensee concerned is given a quota of General Electric's production for the year. It is interesting to note that the two major companies in this field, General Electric and Westinghouse, retain 80 percent for themselves; 10 percent is parceled out to the other licensees and 10 percent belongs to the struggling independents who are constantly harassed with infringement suits by the General Electric Co.

In view of the purpose of the patent law to promote science and the useful arts, it is interesting to note the effect of this restriction in the incandescent-lamp industry. I quote from a memorandum found during one of our investigations dealing with the effect of this restriction:

"I repeated, of course, what we had told them of our accomplishments and that we would have a great deal to contribute. He said he appreciated that we had done quite a lot of work and that our patents were of value. He brought out how well pleased Westinghouse and Champion were with their set-up and how much more profitable it was for them to cut down their development activities. I told him that we did not agree with such a policy and did not feel that it was for the good of any industry to try to have all developments confined to one laboratory; for example, where would the automobile industry be today if all developments were concentrated in one of the big companies? He replied that, of course, his company had access to all the developments of Europe."

The cases discussed above are, of course, illegal. The penalty of the cancelation of the patent, however, would prove a much greater deterent in the exercising of such patents. And even more important, the illegal restriction would be called to the attention of the Department of Justice the moment an attempt to enforce it was made.

8. *The use of patents to fix prices.*—The abuse of patents as a means of obtaining price fixing is widespread. We give a few examples from the thousands of documents in the files of the Antitrust Division. In an interoffice memorandum from C. L. Bausch to Dr. W. B. Rayton entitled "Patent Protection," dated September 28, 1938, the following statement is made:

"Of our sales in 1937 about half of the products sold were protected by patents, roughly, $5,000,000 on which we paid an average of 5-percent royalty, $250,000 to outside sources for protection on our product *and for buying the means of accomplishing price control. A great deal of money, but apparently justified by the figures in most cases.*" [Italics supplied.]

As another illustration I quote the reply of Mr. Carl Bausch of the Bausch & Lomb Optical Co. to a naive inquiry by one of his staff asking why the company continued to pay royalties on worthless patents. An excerpt reads as follows:

"A great many of the patents that we are operating under are very weak, and if we wished to, we could break them ourselves and not pay royalties, but good business judgment, I believe, justifies the idea of paying royalties even on weak patents in order to maintain a price-control picture that is helpful."

M. J. Root, Jr., of Shuron, a member of a spectacle cartel, a Ful-Vue sublicensee, stated the same belief on August 13, 1935, when he wrote to a Shuron employee, as follows:

"Frankly, the Ful-Vue patents are so weak that they are a tremendous task to uphold, because the American Optical Co. cannot be too severe in its tactics in keeping the licensees in line, *because if they were forced to bring suit, the patents might be knocked out and the whole Ful-Vue license system would topple, and Ful-Vue and Hi Bo products could then be made by anybody at any price, and the nice margin of profit in this business would be lost.*" [Italics supplied.]

The use of a patent which the owner believed to be invalid for the purpose of fixing prices is clearly illegal. Here the bill gives the protection of immediate discovery when suit is brought.

The buying up of patents to fix prices prevents an unclarified legal problem which the bill solves by applying the standard of reasonableness.

A third use of patents to fix prices was approved in the *General Electric case.* In that case the court held that the holder of a patent engaged in the actual manufacture of the product may license his competitors on condition that they follow the prices he fixed. One of the theories of the case was that a patent

Digitized by Google

holder-manufacturer should not be forced to compete with his own licensees. The Department of Justice is seeking an appropriate case in which to ask the court to reverse that doctrine where it can be shown that the patent is used as an instrument to control the market of a commodity.

Clarifying legislation, therefore, is imperatively needed. Frankly we do not like the General Electric doctrine even as applied to an infant industry. We admit, however, some justification if a small concern is trying to get on its feet by manufacturing and therefore requires its licensees not to sell below its own cost. Where, however, the patent holder controls a substantial percentage of the market there is no reason whatever why he should be allowed to consolidate his position by such a doctrine. The bill will limit the doctrine of the *General Electric case* to the protection of small industries, and certainly that is as far as the doctrine should go.

9. *Blocking and fencing patents.*—As an example of this abuse I quote the patent policy stated by the Hartford Empire, which succeeded in levying a toll on every housewife who bought food or drink in jars or bottles:

"In taking out patents we have three main purposes, (*a*) to cover the actual machines which we are putting out, and prevent duplication of them * * *; (*b*) to block the development of machines which might be constructed by others for the same purpose as our machines, using alternative means; (*c*) to secure patents on possible improvements of competing machines, so as to 'fence in' those and prevent their reaching an improved state. * * *"

We concede that under the present confusion there is some excuse for taking out patents with all sorts of doubtful claims as a means of protection. The effect of the bill on such shaky patents would be to confine their use for protection only. Every infringement suit would have to meet this test under the bill after notice to the Government.

10. *Foreign cartel abuse.*—This committee can have no doubt that foreign cartels have operated in this country through our patent system. Gigantic combinations, clearly illegal under the antitrust laws, have been disguised in the form of innocent-appearing patent licenses and have cloaked themselves with the mantle of the struggling, impecunious young inventor. It remained only for the Hitler government to use these cartel agreements in order to further Germany's interests and weaken her potential enemies. As early as 1929 the chairman of the German electric-lamp trust explained how his company was able to maintain restrictive agreements with American firms despite our antitrust laws. He stated:

"We had already very extensive collaboration with the American firms by which mutual patent protection had been obtained. Therefore, we have no reason to be excited about the American antitrust law."

The hormone trust gives us another example. In that case, three European firms dominated by Schering A. G. of Berlin were members of a cartel which operated in this country through three supposedly American subsidiaries. The domination of this cartel over the American companies was so complete that in the underlying cartel agreement it was provided that disputes should be settled by arbitration in Europe. The agreements between the American companies were drawn up in Europe in accordance with the basic underlying cartel understanding. How could these agreements be given legal effect in this country? The license agreements were drawn up in Europe on the basis of patents doled out to the American companies by their European masters. The attorney for one of the European companies was well aware of the American antitrust laws. He stated:

"The questions arising under the American antitrust laws were settled in such a manner as to render the agreements valid under the present antitrust laws as interpreted by the weight of authority in American courts."

The whole intention and purpose and underlying agreement of this cartel as it operated in this country was to maintain a dominating and exclusive position in a rare and important drug. The intention of the parties is indicated by the following memorandum:

"The provision requiring the payment of royalties on products having an 'economically dominating position' whether or not such products are patented, has been omitted. This was done because, as already understood in Europe, Ciba's American lawyers consider it exceedingly dangerous to refer to unpatented products having an 'economically dominating position' as indicating that the intention of the parties and the effect of the agreements would be to give to the parties an effective monopoly in unpatented products. Ciba's American

Digitized by Google

lawyers consider that in the event that the American license agreements should be challenged, either in a governmental investigation or otherwise, any suggestion that the parties intended to obtain a monopoly in unpatented products might cause a doubt on the legality of the entire arrangement governing American business."

The files of the companies disclose their intention—their cartel was to operate in this country under the cover of patent protection. They recognized that in order to accomplish this they would have to see to it that the right party got the paricular patent claim. I quote from the files of one of the companies:

"As it is known, in the United States the antitrust legislation is of extremely great significance. The different agreements which are in the state of preparation in the United States are intended to put all contractors in a position to sell hormone compounds in the United States without any violation of those statutes * * * so far as * * * cross promises to maintain promises exist, this promise is only lawful if the licensee, in this case Ciba, possesses the protection of a patent claim. * * *

* * * * * * *

"According to the information of Dr. Joseph Engi, almost daily new indictments based on the antitrust legislation are made. Under such circumstances it is extremely important to obtain as fast as possible the protection of the most important patent claims.

In connection with one of the proposed transfers of a patent application intended to cover up this cartel scheming, one of the companies objected that "an expert would understand immediately that the transfer of this application served only aims which have to be considered as unlawful according to the antitrust legislation. We couldn't even mention any consideration given to Ciba."

These cartels have operated in the fields of the most important strategic materials. It would be difficult to conceive of three more important elements than magnesium, rubber, and plastics to the proper functioning of our war effort. Yet these and many more were encompassed in a network of patent control which resulted disastrously for this country. Rohm & Haas was forbidden to enter a variety of organic chemical fields, including synthetic rubber, as a result of an agreement with I. G. Farbenindustrie and Rohm & Haas, of Darmstadt, Germany. Furthermore, its domestic agreement with du Pont provided that the latter company could produce no more than 50 percent of the amount of plastics of the Rohm & Haas Co. These plastics are used in making bomber noses and other aircraft parts.

I. G. Farbenindustrie, the largest corporation in Europe, and Standard Oil of New Jersey, the largest industrial corporation in the world, have divided between them world production of synthetic petroleum products and chemicals. It was through this cartel that the Hitler government was able to impede the development of synthetic rubber, acetic acid, methane steam, and other vital chemical products in this country.

The Krupp Co., of Essen, Germany, and the General Electric Co., by means of a patent cross-licensing agreement, were able to restrict the number of producers of tungsten carbide in this country, eliminate those which attempted to compete independently, and raise the price to such arbitrarily high levels that little of the material was utilized in this country despite the fact that it is believed to be one of the keys to the German rearmament program and over 20 times more of the material was used in Germany than here. The resulting monopoly raised the price from $48 a pound to $453 a pound, which had an enormous effect in discouraging its use. The strength of this cartel was so great that it prevented a test of its patents for 12 years, at the end of which time they were proven invalid and worthless.

These and other cartels which have been examined by this committee operated on the basis of the patent system.

First. They gained control of patent claims of important and strategic processes and thus stood in a position where they could deny this country the use of its own resources.

Second. They entered into restrictive licensing agreements with American companies which had these effects: (1) These license agreements concealed from the American public the fact that foreign interests were in a position to dominate our economy. If the American public had become aware of this fact, the pressure would have been such as to have gained immediate patent reform. (2) Through restrictive license agreements these cartels effectively legislated as to what American corporations might or might not do in a manner which would have been

Digitized by Google

prohibited to the American Congress. (3) Thus the ability to put in a license agreement restrictions as to fields of operations, whether geographic or technological, has been the cloak for a control of American companies more binding than outright stock interest.

Third. Through these agreements foreign cartels have control of where and to whom American products may be sold in foreign markets. If we are now worried about the South American market, let us remember that we gave the South American market to the Germans through these patent agreements.

These international patent cartels have been built up under the cloak of secrecy. The bill creates the necessity for disclosure and immediate Government action; first, when the agreements are entered into, and then when an attempt is made to enforce them through infringement litigation. Thus discovery becomes no longer a matter of accident—it is inevitable in the course of the operation of the cartel. And cancelation follows discovery.

Therefore the bill which I have proposed would make it impossible for any foreign cartel to claim that it could exercise strategic control to keep this country from utilizing its own resources. In the first place, the agreements would have to be registered with the Attorney General and therefore some knowledge would be had concerning their existence. Second, any aggressive action in the form of infringement suits would likewise be known to the Department and the Department would act to save American enterprise. Third, the Department would move to cancel the patent right.

CONCLUSION

The abuses of the patent system have long been before congressional committees. In 1912 there were extensive hearings by the Patent Committee of the House under Representative Oldfield; in 1919 there were the Nolan hearings; in 1935 extensive hearings were held before the House Committee on Patents, and again in 1937. In 1938 the problem was investigated by the Temporary National Economic Committee, and, finally, your committee has made an extensive and thorough study of the operation of the patent system.

Today the Government has power to direct the manufacture of any patented commodity leaving the patent owner only the right to sue in the Court of Claims. This remedy is not a cure for the abuses we have enumerated unless we take the position that we want the Government to go into business as the sole alternative to the continued existence of a patent cartel. Actually our purpose should be to encourage independent enterprise both during the war and after the war. Of course, the Government's power to direct manufacture is essential in order to break any log jams that may develop. However, this is no encouragement to the private manufacturer who has a new idea with which he wishes to experiment. Had this remedy been applied in the period immediately prior to the war it would have compelled the Government to go into the business of manufacturing steel and aluminum and light metals and plastics and chemicals, and so on through the list. Such a remedy should be applied as a last resort and not as a positive program for the freeing of private industry from patent abuses. Indeed, it does not free industry; it simply permits the Government to step in and when the Government steps out, it leaves the patent cartel still in control.

The Constitution provides that the patent law shall promote the progress of science and the useful arts. It has been used by patent cartels to sabotage science and the useful arts. Today in a national crisis we face the shortages created by patent cartels. So I believe that in spite of the protests of the defenders of special patent privileges for a powerful minority, we have a better chance than ever before to win our fight to free industry from these indefensible restrictions. And it is important to the American public that we succeed.

We have seen our country weakened, our resources withheld from us, our productive capacity thwarted, because of our failure in the past to correct the misuse of our patent system. The time to strike and strike hard is now.

×

Digitized by Google

Digitized by Google

prohibited to the American Congress. (3) Thus the ability to put in a license agreement restrictions as to fields of operations, whether geographic or technological, has been the cloak for a control of American companies more binding than outright stock interest.

Third. Through these agreements foreign cartels have control of where and to whom American products may be sold in foreign markets. If we are now worried about the South American market, let us remember that we gave the South American market to the Germans through these patent agreements.

These international patent cartels have been built up under the cloak of secrecy. The bill creates the necessity for disclosure and immediate Government action; first, when the agreements are entered into, and then when an attempt is made to enforce them through infringement litigation. Thus discovery becomes no longer a matter of accident—it is inevitable in the course of the operation of the cartel. And cancelation follows discovery.

Therefore the bill which I have proposed would make it impossible for any foreign cartel to claim that it could exercise strategic control to keep this country from utilizing its own resources. In the first place, the agreements would have to be registered with the Attorney General and therefore some knowledge would be had concerning their existence. Second, any aggressive action in the form of infringement suits would likewise be known to the Department and the Department would act to save American enterprise. Third, the Department would move to cancel the patent right.

CONCLUSION

The abuses of the patent system have long been before congressional committees. In 1912 there were extensive hearings by the Patent Committee of the House under Representative Oldfield; in 1919 there were the Nolan hearings; in 1935 extensive hearings were held before the House Committee on Patents, and again in 1937. In 1938 the problem was investigated by the Temporary National Economic Committee, and, finally, your committee has made an extensive and thorough study of the operation of the patent system.

Today the Government has power to direct the manufacture of any patented commodity leaving the patent owner only the right to sue in the Court of Claims. This remedy is not a cure for the abuses we have enumerated unless we take the position that we want the Government to go into business as the sole alternative to the continued existence of a patent cartel. Actually our purpose should be to encourage independent enterprise both during the war and after the war. Of course, the Government's power to direct manufacture is essential in order to break any log jams that may develop. However, this is no encouragement to the private manufacturer who has a new idea with which he wishes to experiment. Had this remedy been applied in the period immediately prior to the war it would have compelled the Government to go into the business of manufacturing steel and aluminum and light metals and plastics and chemicals, and so on through the list. Such a remedy should be applied as a last resort and not as a positive program for the freeing of private industry from patent abuses. Indeed, it does not free industry; it simply permits the Government to step in and when the Government steps out, it leaves the patent cartel still in control.

The Constitution provides that the patent law shall promote the progress of science and the useful arts. It has been used by patent cartels to sabotage science and the useful arts. Today in a national crisis we face the shortages created by patent cartels. So I believe that in spite of the protests of the defenders of special patent privileges for a powerful minority, we have a better chance than ever before to win our fight to free industry from these indefensible restrictions. And it is important to the American public that we succeed.

We have seen our country weakened, our resources withheld from us, our productive capacity thwarted, because of our failure in the past to correct the misuse of our patent system. The time to strike and strike hard is now.

Digitized by Google

Digitized by Google

Digitized by Google

4.M592:Sci2 pt.2

SCIENTIFIC AND TECHNICAL MOBILIZATION

MAY 24 1943

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 2

APRIL 3, 9, AND 27, 1943

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1943

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*

WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON SCIENTIFIC AND TECHNICAL MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HENRY H. COLLINS, JR., and HERBERT SCHIMMEL, *Consultants*

COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

Statement of—	Page
Baver, L. D., Director, Agricultural Experiment Station, North Carolina State College, Raleigh, N. C	125
Buchanan, R. E., Director, Agricultural Experiment Station, College of Agriculture, University of Iowa, Ames, Iowa	109
Ellis, Clyde, executive manager, National Rural Electric Cooperative Association	143
Hammond, Harry P., Dean of Engineering, Pennsylvania State College	136
Lindquist, John A., chairman, committee on accounting manpower of the American Institute of Accountants	187
Orton, C. R., Dean, College of Agriculture, West Virginia State University, Morgantown, W. Va	114
Slattery, Harry, Administrator, Rural Electrification Administration	163
Tynes, Finley, secretary-manager, Staunton and Augusta County Chamber of Commerce, Staunton, Va	177
Wasserman, William Stix, Investment Banker, Philadelphia, Pa	103

SCHEDULE OF EXHIBITS

No.	Exhibit	Appears on page
7	Chart showing corporate relationships of electric-power companies, submitted by Clyde Ellis and filed with the committee.	
8	Rural Electrification Engineering and Electro-agricultural Engineering, excerpts from a paper presented by M. M. Samuels under the auspices of the Committee of Domestic and Commercial Application before the American Institute of Electrical Engineers, submitted by Harry Slattery	169
9	The Engineer's Place in Public Life, excerpts from a speech by Harry Slattery, before the St. Louis section of the American Society of Civil Engineers, Apr. 27, 1942, St. Louis, Mo., submitted by Harry Slattery	173
10	Letter from Harry Slattery to Senator Harley M. Kilgore, submitted by Harry Slattery	175
11	Rural Electrification Administration Statistical Tables, submitted by Harry Slattery and filed with the committee.	
12	The Practice of Public Accounting, submitted by John A. Lindquist	191

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

SATURDAY, APRIL 3, 1943

UNITED STATES SENATE,
SUBCOMMITTEE ON SCIENTIFIC AND TECHNICAL MOBILIZATION
OF THE COMMITTEE ON MILITARY AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 2 p. m., in room 104–B, Senate Office Building, Senator Edwin C. Johnson (acting chairman) presiding.

Present: Senator Johnson (acting chairman).

Also present: Henry H. Collins, Jr., and Herbert Schimmel, of the committee staff.

Senator JOHNSON. The committee will come to order.

We have Mr. William Stix Wasserman present as our first witness. Mr. Wasserman, will you proceed in your own way?

STATEMENT OF WILLIAM STIX WASSERMAN, INVESTMENT BANKER, PHILADELPHIA, PA.

Mr. WASSERMAN. I appear here as an investment banker, in support of this measure, because I believe the bill is of benefit to private enterprise, and to all those whose work, such as that of the average investment banker, is contributory to the use of private capital in the expansion of enterprise. I also feel that the bill is essential for the effective prosecution of the war effort, and that it has most interesting implications for post-war recovery.

My business experience is as follows: Following graduation from Princeton, I was assistant to the president of the Artloom Corporation. Later I became connected with Dillon, Read & Co. and afterward formed the Investment Corporation of Philadelphia, an investment trust interested not only in standard investments but in the promotion of new enterprises. I also helped form the Delaware Fund and the W. S. Wasserman Co., and was president of both. My other connections include the Wilmington Chemical Co. and the Penn Jersey Shipyard in the organization of which the Wasserman Co. was the motivating financial mainspring. I was also director of the New York Shipbuilding Corporation and the Ryan Oil Co. In addition to these I was chief American delegate to the World Economic Conference in Berlin, and was employers' adviser to the International Labor Office in Geneva.

My interest in this bill stems from the financial experience I have had in promoting new enterprises. My belief in this type of enterprise springs from the belief that the owner of capital can best serve his own selfish interest as well as that of the public by putting his

Digitized by Google

capital to work in such a way as to stimulate production of new products, thereby creating more employment and general prosperity. It is my belief that the following out of this policy has been responsible for the economic development of this country and is responsible for our industrial leadership in the world today.

The standard of living of any country can be traced to three sources:

1. The amount of raw materials available.
2. The ability of the people to organize themselves in such a way as to exploit these materials successfully.
3. The amount of technological improvement that emerges year by year, and is put into business practice.

Most present-day inventions have an exceedingly difficult time in finding sponsors, no matter how meritorious the ideas may be. Let me cite two specific cases from my own experience.

Some years ago I was approached by some of my friends in England and asked whether my firm would be interested in backing a revolutionary type of airplane propulsion based on the jet principle. Some of my banking friends had run across a young man in the R. A. F. who had come out with what he claimed was a completely revolutionary idea. This principle was mathematically analyzed by one of the greatest mathematical geniuses in England and found to be correct. Extreme difficulty was encountered in raising funds. A small amount of money was made available, but in the long run the company had to be financed by the British Government to bring this inventor's plan to practical development. This invention may be of first-rate importance in winning this war. I am sorry that I cannot divulge any further information because this company is on the British Government's secret list. But I want to bring out the fact that British capital was not interested in financing this principle and that in an emergency, aid had to be rendered by the Government.

(Discussion off the record.)

Mr. WASSERMAN. Furthermore, a great part of the investment funds that are available in this country are in the hands of trust companies that haven't the right to take risk capital on. In addition I would like to point out that under present methods of taxation—and I am not criticizing one way or the other our methods of taxation, I am only stating a fact—it is almost impossible to get money for new enterprise, because most people that have money realize the hazards of new enterprise. The record of new enterprise is that 9 out of 10 go bankrupt within 5 years, and when you have a tax law that restricts you to 6 or 8 percent on your money, you simply don't put that sort of money into new enterprise, because it is "heads I win, tails you lose".

The thing that lured private capital into new enterprise and lured them to take all the risks that new enterprise involved, was the hope that they would get 100 or 200 or 300 percent return on their capital.

Now that we have—and it is quite necessary in wartime—such a restriction on profit, you simply are unable to raise money for new enterprise when you consider the risks involved.

As a second illustration I would like to point out the case of the Wilmington Chemical Co. About 7 years ago I heard that a group

Digitized by Google

of Viennese scientists had discovered that by treating the sludge waste which comes from the refining of oil, they could obtain a material which was most useful as a rubber extender, since this material had practically the same properties as crude rubber and vulcanized with crude.

When the matter was brought to my attention, I in turn took it to Mr. Francis I. du Pont, who for many years had been research head of the du Pont Laboratory. Despite the fact that Mr. du Pont claimed that it was one of the most interesting chemical discoveries that he had come across and despite the fact that he himself helped me in founding the company, and became the leading financial contributor to the company, nevertheless it was exceedingly difficult to raise capital for this company. Without the benefit of the du Pont backing, the company would have gone under long ago. It took us 7 years to get that company to the point of commercial exploitation. We brought over from Vienna a group of refugees who had been working on the chemical formulas in connection with the product, put them to work in a laboratory in Wilmington, and poured money into that company year after year, and only now is it beginning to bear any fruit. In fact I would say that this month was the first month in its history that it broke even. And yet it is likely that this company will become a leading contributor in solving our rubber problem. Its product has already been accepted generally by the Office of the Rubber Director and by industry in general.

I bring that out because here was a situation that had already been tested commercially in Germany. I am told—I can't vouch for this—that there isn't a rubber tire in Germany that doesn't use the product naftolen, which is what this company makes. What is it? It is a material that is made by chemically treating oil sludge, which is the waste of an oil refinery. It has exactly the same chemical properties as rubber and joins with rubber and vulcanizes with it. If you add 50 percent of this material to 50 percent of rubber, you get a new type of rubber. It is now being extensively used in the rubber shoe industry, and the new product is just as good, if not better, than pure rubber. It has better properties and it is being used in tires and for all sorts of other rubber uses. Yet in spite of the fact that it is a low-cost material, one which could actually compete in cost with rubber, we had a very difficult time in getting private capital sufficiently interested to make this company go, and if it hadn't been for the courage and faith of Francis du Pont, this company wouldn't be in existence today.

Senator JOHNSON. Will the plant shut down as soon as natural rubber comes back on the market?

Mr. WASSERMAN. No, it will not; because it can compete in price with natural rubber and it has certain properties, when added to natural rubber, that are exceedingly advantageous. For example, it permits the addition of larger amounts of carbon black, which is the cheapest material that goes into the finished rubber product.

Senator JOHNSON. You don't advocate, then, destroying our synthetic rubber plants as soon as the war is over, in order to promote foreign trade?

Mr. WASSERMAN. No, I certainly do not.

Digitized by Google

I just want to add that in view of my 15 years in investment banking and in the promotion of new enterprises, I am convinced that this bill can do much toward developing many useful inventions to the point where private enterprise itself can carry along the burden and make the fruits of the imagination of our inventors available to the public at large. I see great fields of opportunity for the investment banker in financing new enterprises based upon new inventions and discoveries which have been brought through the pilot-plant stage by the proposed Office of Scientific and Technical Mobilization and are ready for commercial exploitation. When I refer to "this bill" in my remarks, I have reference to S. 702.

There is just one other thing that I would like to add extemporaneously and that is that I feel that these are times when we can't look at everything through financial glasses. If we did, we wouldn't be sending ships, that are likely to be sunk, across the sea. We have to take chances today that we wouldn't ordinarily take in peacetimes. The Government is the only agency in position to take these very large financial chances.

If we wait for some of these inventions to reach the point where they are attractive to private capital, we will miss out perhaps on some of the most important inventions that can contribute to our victory in the war. I think that we have to get into the habit of thinking not in financial terms but in terms of war opportunities often involving considerable risk.

We have to apply the same perspective to new inventions that we take in every bombing raid and every fresh offensive. Perhaps 9 out of 10 inventions backed by this corporation that you are proposing to bring to fruition, will be no good, but maybe just that one-tenth may be the invention that will cure the submarine evil or give us a new type of airplane, or a new type of explosive, and bring this war to an end. The reason I am here is that I feel so strongly about this.

I remember 3 years ago Mr. Simon Lake came to me—he was the inventor of the submarine, you may remember—he came to me with a series of inventions. Some of those might be of use today. One of them appealed to me exceedingly; it was a small submarine similar to the type that the Japanese have used—one of which has just arrived in Washington on exhibit. He would have been able at that time to build them by the thousands, at a very low cost. His idea was that if we had those in the harbors of the outlying islands such as the Philippines and Hawaii, always on guard duty as part of our defense, they would make a very important contribution to the defense of this country.

I was enthusiastic about the idea but I couldn't get to first base with anyone. Yet if there had been an agency of this sort I am sure that they would have built one model submarine, perhaps 2 years ago, and tested it to see whether it was any good or not. It might have changed things both at Pearl Harbor and in the Philippines.

Mr. COLLINS. What specific obstacles did you encounter in trying to finance Mr. Lake's idea?

Mr. WASSERMAN. We couldn't get any orders to begin with, and until you actually had orders on hand you couldn't get any financial group interested in it.

Digitized by Google

Dr. SCHIMMEL. Did you have the vicious circle that you couldn't get orders because you didn't have a tested model?

Mr. WASSERMAN. Yes. I am sure that if Mr. Lake could have taken a tested model down to the Navy Department and said, "Here it is, come and look at it," we might have had a chance of selling the idea to the Navy.

He also had at that time an idea for a large cargo-carrying submarine. If we had had three or four cargo-carrying submarines of large dimensions we might have been able to hold out in the Philippines considerably longer.

Senator JOHNSON. Yes, Mr. Lake presented that idea to a subcommittee of the Senate Military Affairs Committee, and all the members of the committee were greatly impressed by what he advocated, but we couldn't get the Navy to see it that way, or the merchant marine, or anyone in Government.

Mr. WASSERMAN. I don't know that Mr. Lake's plans were correct. The reason that predisposes me in his favor is that he was the first man in the face of all obstacles actually to build a submarine, so he must know a great deal about them. He was the inventor, and he came to me and said, "Here are plans for a cargo submarine; it may save our life in war."

If we had a group of cargo submarines now, and large ones, part of our shipping difficulties might be eased considerably. But I am not an authority on these things, I am just talking as a financial man, and saying that private capital isn't in any position to undertake either pilot plants or large scale models until they have something much more certain to go on than merely the fact that this is an interesting defense proposition.

Senator JOHNSON. I think your point is very well made and your testimony is in line with the opinions of those in Congress who believe that S. 702 is the answer to some of these problems.

Mr. COLLINS. Do you see any danger to investment banking in the Government going into the development of new inventions through the pilot plant stage?

Mr. WASSERMAN. I can see only that it would help. I cannot see anyone who is interested in private capital not wanting every avenue opened up to the development of new technological processes. If there is any danger it would come after and not before the pilot plant stage, and if it is going to be the policy of the Government to make these pilot plants and inventions available to private enterprise, then I can't see any danger.

What most businessmen fear is what they call unfair business competition with government. No private entrepreneur can compete with government on fair terms because the bookkeeping is quite different, as you realize. But if you are going to make these inventions available where they fit into the pattern of private enterprise, available to private enterprise even on a competitive basis, I should think that private enterprise would welcome them.

Dr. SCHIMMEL. There would be, of course, one very great difference in the exploitation of such inventions from the exploitation of the inventions that now come from private industry.

Section 7 of this bill provides that once the Government has assisted in developing an invention, it must be made available to all

Digitized by Google

comers so far as that is consistent with national defense. Normally when an invention is developed in private enterprise one or two companies get a corner on that particular invention and develop it as an exclusive project.

Mr. WASSERMAN. When they have spent the research money themselves, they are entitled to that protection for a period of years; but if it is Government and public money that has done the spade work and taken the risk, I can't see why private enterprise would object to having the invention thrown open to all companies.

As a matter of fact, one of the things that justifies private enterprise is the necessity of keeping competition high, wide, and handsome, because competition forces efficiency on private enterprise which results in lower prices to the public.

Dr. SCHIMMEL. Mr. Arnold said the other day that that was their boast, but not a fact.

Mr. WASSERMAN. Well, why not accept the challenge of private enterprise? I am sure that if there is a public demand for a product, the fact that there is competition won't prevent private enterprise from making full use of it.

Mr. COLLINS. You said something about examining very closely the merits of all inventions during war, and leaning over backward to discover new ones that might, at first sight, not appear to be practicable. Do you think that any provision should be made in this bill to bring that about more adequately?

Mr. WASSERMAN. I think that the emphasis in this bill ought to be that every new invention, even if it appears a little crackpot at first sight, which many of them will, should be given a thorough review and responsibility should be on the fellow that turns it down. This is no time for financial caution. That doesn't mean for one moment that we should leave the door wide open and try out a lot of damn fool schemes, but I think that we have got to do away with what I would call normal business caution in wartime, and be prepared to build a lot of pilot plants and inventions that may find their way to the scrap heap eventually, in the hope that we may get two or three that will be so revolutionary and so worth while that they will contribute to victory.

Senator JOHNSON. Why do you confine that to wartime?

Mr. WASSERMAN. The necessity is upon us in wartime.

Senator JOHNSON. That spade work should have been done before the war came, shouldn't it?

Mr. WASSERMAN. That is perfectly true. I would say that with any inventions that relate to national defense we should keep an open mind, as open a mind as possible. There is always the tendency—as I have discovered in my experience—when dealing with engineers especially, to turn the other fellow's idea down. It takes too much trouble to investigate it, usually, and there are always reasons why it can't be done. Every worth-while invention of the past hundred years had a group of people who said that it was impossible.

Certainly the great mass of people never thought we would fly, and I know that if 25 years ago somebody had said that I could talk across the Atlantic through the ether, without even the use of a wire, I would have been exceedingly skeptical.

I feel that we must have as open a mind as possible and that the emphasis of this bill should be not to penalize the officers of this

Digitized by Google

corporation for making mistakes, but to encourage them to take risks if the risks have some justification.

Mr. COLLINS. Do you think there should be a committee of appeal to which an inventor could go if he is turned down by this organization?

Mr. WASSERMAN. I really can't answer that question, I don't know.

Mr. COLLINS. What kind of an administration do you think would be the best to administer such an organization as this?

Mr. WASSERMAN. I would say a hard-boiled visionary, if you can get that sort of man.

Senator JOHNSON. Mr. Wasserman, we have some other witnesses who were asked to come here at 2:30, and with your permission we would like to go on with them now and then talk with you further a little later.

Mr. WASSERMAN. Certainly; I will be here available for you.

Senator JOHNSON. Thank you.

We next have the representatives of the Association of Land Grant Colleges.

(The following representatives of the Association of Land Grant Colleges were present:)

R. E. Buchanan, dean, college of agriculture, University of Iowa; R. B. Corbett, dean, college of agriculture, University of Maryland, College Park, Md.; L. D. Baver, director, agricultural experiment station, North Carolina State College, Raleigh, N. C.; Edmund Secrest, director, Ohio State Agricultural Experiment Station, Wooster, Ohio; C. R. Orton, dean, college of agriculture, West Virginia State University, Morgantown, W. Va.; C. E. F. Guterman, director, agricultural experiment station, Cornell University, Ithaca, N. Y.; W. A. Lloyd, director of information, Association of Land Grant Colleges.

Dr. CORBETT. We have three witnesses here this afternoon who are going to make statements, and if agreeable to you I will call on them in turn.

Senator JOHNSON. Just as you wish.

Dr. CORBETT. Our first witness will be Dr. Buchanan of the University of Iowa.

STATEMENT OF R. E. BUCHANAN, DIRECTOR, AGRICULTURAL EXPERIMENT STATION, COLLEGE OF AGRICULTURE, UNIVERSITY OF IOWA, AMES, IOWA

Dr. BUCHANAN. My name is R. E. Buchanan; I am director of the Agricultural Experiment Station of the Iowa State College at Ames, Iowa.

This committee, Mr. Chairman, desires to tell you who we are and what we represent, and the exact reasons, so far as possible, for asking the courtesy of this hearing.

Dr. Corbett is our chairman and is chairman of a subcommittee made up of directors of agricultural experiment stations. We constitute a subcommittee of a larger committee on agricultural experiment station organization and policy. We have been authorized by the executive committee of the Association of Land Grant Colleges to make this presentation.

We represent the 53 agricultural experiment stations of the United States, including the experiment stations of Alaska, Hawaii, and Puerto Rico.

Digitized by Google

On the State level we represent sections of governmental activity in research and education. Our purpose in appearing before your committee is threefold:

1. To outline briefly the nature and scope of our agricultural experiment stations.

2. To explore with you some of the implications of S. 702 with reference to these stations and to suggest careful study and scrutiny of certain sections to enable you to avoid, if possible, any undesirable disruption of our cooperative research relationships now established and functioning.

3. And I would like to make this quite clear—not to assume a role either of advocacy or of unsympathetic criticism of the bill, but rather to place before the committee, as objectively as is possible, facts which we believe will be valuable in your final formulation of a bill which will, if enacted, do quite exactly what you want done.

May I emphasize that we are authorized neither to endorse nor to refuse to endorse a bill, but to be as cordially helpful as possible in this discussion.

Now first, a brief statement as to just what the stations are and why we are interested.

The State agricultural experiment stations of the United States are a natural outgrowth of a demand from agriculture, as a major industry of the Nation, for assistance. This demand led, nearly a hundred years ago, to the foundation in several States of colleges in which the teaching of agriculture should be emphasized, together with other lines of work.

Later the Congress gave endowments in the form of land grants to each State, and for the last three-quarters of a century every State has developed such an institution.

Naturally these college not only taught agriculture but studied agriculture, that is they started research. Soon there were several agricultural experiment stations established.

About 55 years ago the Congress adopted a policy of grants-in-aid to any State that wished to establish such an experiment station. All of the State legislatures accepted the proffer and each has now at least one such station—53 all together. Since that time there have been additional grants-in-aid authorized and appropriated by the Congress to the States.

It should be emphasized that these stations were created by the respective State legislatures. They are not Federal institutions.

Taking into consideration current use of physical facilities as well as current expenses, considerably more than two-thirds of the funds expended by these stations are derived from non-Federal sources. These agricultural experiment stations taken together constitute, I believe, the greatest integrated research organization in the United States. Certainly when one adds the complementary research facilities and personnel of the United States Department of Agriculture, there is probably nothing strictly comparable anywhere in the world.

The stations spend annually on their research programs about $23,000,000. The States accept the responsibility of providing most of the land and physical plant needed, and most of the funds required for the financing of the solution of problems that are primarily of State interest.

Digitized by Google

We are making this statement so that it may be evident why the land-grant colleges, of which in general the agricultural experiment stations constitute a part, are vitally and intimately concerned in S. 702, in which there is contemplated a new set of relationships.

The job of the agricultural experiment stations is of course to help agriculture, that is, if you please, the farmer, by solving the innumerable problems with which he is confronted.

It must be remembered, of course, that the farmer is both producer and consumer, and many of the problems naturally are in the field of consumption, and their solution benefits all consumers, which means the entire American public.

For example, a very considerable part of our modern advances in human nutrition, proving so important in our wartime economy, have stemmed from the work of these agricultural experiment stations. The coordinated researches of these stations and the United States Department of Agriculture have been and are so widespread and important that it would indeed be difficult, I believe, to find a farmer in the United States who is not making daily use of the information which they have provided.

It would take entirely too long to enumerate the economic advantages which have accrued from the work of the stations. In my own State of Iowa, almost every acre of corn, of oats, of soybeans, and so on, is planted with seed which owes its quality, and in many cases its origin, to the work of the station and of the United States Government in cooperation.

You will recognize then that the enactment of S. 702 will bring a whole series of new Federal-State relationships. It is necessary, we believe, to explore this matter of interrelationships and implications if your committee is to have a clear picture of just what is agriculturally involved in the States in respect to the proposed act.

The stations, in most cases, are organized as parts of land-grant colleges and universities. Included in these are some of the greatest educational institutions of the world. The stations are not independent entities and cannot be considered separately from the schools to which they are attached.

In our presentation, therefore, it will be necessary occasionally to include statements which relate to the institutions as a whole, rather than specifically to agriculture or to the experiment stations.

These stations are chartered by their respective States to carry on research for the good of the farmers in the State. They receive most of their funds, two-thirds in fact, from the State and must be properly integrated into the general government of the State.

We are interested, therefore, in pointing out any statements in S. 702 which we believe might lead to future difficulties in Federal-State relationships, or to any conflict in authority.

We wish to explore some of these matters with you. The conditions in the various States are quite different. Certainly you don't wish any failure of functions on the State level through withdrawal of adequate autonomy needed for efficiency.

The problems of agriculture are also frequently regional in nature. The work of one station frequently has its implications throughout an agricultural region.

Now to prevent duplication on the one hand, and to get adequate coverage on the other, there must be suitable relationships developed

Digitized by Google

among the several stations in an agricultural region. This has been done. The directors of each of these agricultural stations in the four main agricultural regions meet regularly and map out the areas in which cooperation seems most desirable.

For example, in the Corn Belt, with which I am most familiar, studies of the problems of marketing of livestock have been made by the cooperation of 13 of the agricultural experiment stations. When we got into it we found that it was quite important that the Department of Agriculture, on the national level, also be included. We invited them to work with us and they accepted the invitation. There is now in print a volume giving the results of this study, published jointly by these 13 States and the Federal Government.

What I am trying to do is to point out that we have, on a regional level, developed a technique of cooperation among States which, as we gain experience, is proving more and more satisfactory on that regional level.

Senator JOHNSON. Are these regional cooperative movements encouraged by the Federal Government or are they entirely brought about through independent action of the States?

Dr. BUCHANAN. They originate in both ways, and I think should originate in both ways. In this particular case, speaking of the livestock marketing, a number of the States found that they were much interested in this particular problem and began to get together, and finally in our regional group it was decided that the problem was big enough, was one on which study was urgently needed, and we invited the Federal Government to come in. So in that case the initiative was on the part of the States. I could point to other examples in which the initiative for the cooperation has been on the part of the Federal Government.

For example, in the Corn Belt we have, in most of the agricultural experiment stations, programs for the development of better hybrid seed corn. This program is in the individual stations in most cases cooperative with the Bureau of Plant Industry. We found that the methods of releasing these inbreeds necessary for the production of the bybrid seed corn were different in the different States, and it was causing confusion. The Federal Government suggested, through the Bureau of Plant Industry, that we ought to get together, and a regional conference is now regularly held in which the men concerned with the plant breeding program get together and we have a coordinated system. In that case the initiation was from the Federal Government. Does that give you the information you desired?

Senator JOHNSON. Yes. That is very interesting testimony for this reason: we hear a great deal of criticism these days about regional governmental units, set up by the Federal Government, which are said to destroy State boundaries and substitute a new form of government in this country. I wonder if you have noted any such dangers? Has the Federal Government undertaken to take over and run the show, or is it willing to cooperate and be helpful? You don't have to answer that question if you don't want to.

Dr. BUCHANAN. I will attempt to answer that question. From the standpoint of research—and that, of course, is the thing in which the agricultural experiment station is particularly involved—I think I

Digitized by Google

can say that there has been very little serious interference on the part of the regional agencies which have been set up. There certainly has been most excellent cooperation among the States themselves and with the Federal Government in the type of regional situation which I have been discussing, where the initiative to get the States together for a specific problem originates either with the Federal Government or with the States.

The ones that I have been discussing have not involved the setting up of permanent regional staffs. For the most part they concern particular problems and the staffs are set up temporarily and when the problem is solved we go on to something else.

Now the regional offices to which I think you refer are in practically all cases in connection with the so-called action agencies, such as A. A. A., the Soil Conservation Service, and others.

Senator JOHNSON. That is correct.

Dr. BUCHANAN. Now while we have some contacts in the agricultural exeriment stations with these agencies, they are not set up primarily as research agencies, and I think that a fairer answer to your question could come through an agency like the extension services in the several States, which have more intimate and direct relationships with the action agencies. Does that answer your question?

Senator JOHNSON. Yes; I think so.

Dr. BUCHANAN. I am not trying to dodge the question at all.

Senator JOHNSON. The answer, I take it, reduced to one word would be no?

Dr. BUCHANAN. So far as the agricultural experiment station is concerned. If I were an extension director, I think I would say yes, that there has been interference, but I am not an extension director. However, there are some here who function also as extension directors.

The same is true on a national level. The expreiment stations, through their national organization and through their committees, are coperating actively on problems which must be studied State by State, and then the whole story put together.

I think in some of those cases again the initiative for such a country-wide study has come from the States themselves. In other cases, the suggestion has been put to the States by the Federal Government.

For example, there is a Nation-wide survey being made at the present time, in cooperation with the agricultural experiment stations and the Federal Government, of the vitamin content of butter. Strangely enough at the present time in regard to butter, one of our most common foods, one that we ordinarly think of as supplying a good deal of vitamin A, we don't know the amount of that vitamin ordinarily consumed or found in butter as it is passed over the counter.

The only way to do that is to make a Nation-wide survey, and methods of collecting samples and so on have been agreed to cooperatively by the Federal agencies and the State agencies.

Now a word as to our relationship to the Federal Government, and particularly to the research agencies of the United States Department of Agriculture. These are numerous, important, and critical. These are areas in which there should be, and is, most active cooperation.

Digitized by Google

For example, when the Bureau of Plant Industry introduces new plants or varieties, or desires to breed them, the work must be done in the States. In consequence there are literally hundreds of projects relating to plants, their breeding, disease control, and so forth, which are financed jointly by the Bureau and the various stations. That has proved exceptionally satisfactory. The ability of American agriculture to rise to the production of greatly increased food supplies in the present emergency is attributed, I believe, quite directly to this cooperative work between the Federal Government and the States. We now have excellent and highly satisfactory coordination of our work on the national level by the Office of Experiment Stations, Research Division, United States Department of Agriculture. With a minimum of centralization of authority there has been evolved a maximum, we believe, of coordination. This office, since its inception, has been headed by a series of agricultural statesmen.

May I suggest, then, that a study of this well-knit series of public service institutions might give some suggestions as to techniques in handling of State-Federal relationship as they relate to the public service organization such as ours.

Mr. Chairman, this is simply to get the topic before you and so that you would understand our point of view and our background. Dr. Corbett will take up if you have no questions.

Senator JOHNSON. Do you have any questions?

Mr. COLLINS. Not now.

Senator JOHNSON. Dr. Corbett.

Dr. CORBETT. The second statement will be made by Dr. Orton of West Virginia.

STATEMENT OF C. R. ORTON, DEAN, COLLEGE OF AGRICULTURE, WEST VIRGINIA STATE UNIVERSITY, MORGANTOWN, W. VA.

Dr. ORTON. It appears to us that S. 702 affects the organization, the past development, and the present operations of the State agricultural experiment stations, as just described.

Some of the points in the bill that affect these stations are:

Point 1—Section 1, item (6), page 3:

to aid, encourage, and protect the research and enterprise of inventors, scientists, technicians, scientific and educational institutions, research laboratories—

There the meaning of the word "protect" is not clear. There are already in existence 28 research foundations established by land-grant institutions for the specific purpose of protecting their research personnel with respect to patent rights and the relations of such patents to the public interest. Some of these research foundations have been in existence for many years and have had a highly successful history. It has been the experience of these research foundations that some inventions, which affect a relatively small number of persons, must be developed on an exclusive basis to assure their commercial development. This actual experience should be recognized in the wording of S. 702, we believe.

Point 2—Section 1, item (8), page 3, line 25:

to promote interest in scientific and technical education, and to privide for all qualified persons the means of scientific and technical training and employment.

Digitized by Google

Since the 53 agricultural experiment stations we represent, taken in the aggregate, we believe, constitute the largest research organization in the world, and since most of the scientific and technical personnel available for agricultural research has obtained actual practice and experience in the agricultural experiment stations, we feel that clarification of the intent of this section should be made insofar as it relates to a system of training already well established and operating sucessfully.

The agricultural experiment stations are quite generally an integral part of a land-grant college or university which engages in the fundamental training of scientific workers, many of which feed directly into the research laboratories of the experiment stations. We are therefore part of a rather complete organization for both training and experience in the scientific phases of agriculture.

Mr. COLLINS. I take it you mean that, in carrying out this purpose, the 53 agricultural experiment stations should not be overlooked, that their facilities should be completely utilized, and that no unnecessary duplicatory apparatus should be set up?

Dr. ORTON. Yes. We feel that our organization already pretty largely fulfills the point that you have in mind here.

Dr. SCHIMMEL. Witnesses appeared here during the previous session who suggested that a great deal of new work should be started with reference to labor productivity in agriculture. They particularly suggested the application of the time and motion techniques, though with not quite the precision that they are employed in industry, to agricultural operation.

Now it is your thought, I gather, that if an office is established under this bill which would attempt to initiate such a program, that the resources of the existing agricultural colleges and experiment stations should be utilized for that purpose, and you would like a clarification of that particular question?

Dr. ORTON. Yes; we would want our institutions used, if they would be useful in the program, naturally.

Senator JOHNSON. But, Dr. Orton, you are more interested in maintaining your present status, without being curtailed or supplanted, than expansion? Your expansion, I take it, would come naturally, there are no handicaps on your expansion, are there?

Dr. ORTON. Not particularly; no. We feel that we have a system of training and experience that is well established and has been sucessful over a long period of years, and that this particular item doesn't apply so particularly to us.

Senator JOHNSON. The intention of the bill, I think, is not to supplant anyone who is already doing the job.

Dr. ORTON. Well, that clears up that point.

Point 3—section 1, item (11), page 4:

to standardize, when in the public interest, scientific and technical designs, practices, and specifications.

Since successful research depends upon individual imagination, initiative, and resourcefulness, this section should be clarified and limited so that the very basis of progress in research is not injured. It should be recognized further that the solution of many problems depends upon adaptation to local situations and conditions.

Digitized by Google

In the social sciences, for example, the practices followed affect the results obtained. Standardization could be carried too far unless limited to identical problems. Standardization of procedure is desirable in many case, but standardization of research is inimmical to personal initiative and imagination.

Senator JOHNSON. I think your statement would be pretty hard to oppose.

Dr. SCHIMMEL. Dr. Orton, is there room for more work in the field of standardization, particularly of design, if one takes into account design of consumer products and industrial raw materials, as well as laboratory equipment?

Dr. ORTON. Well, I expect there is. Ordinarily I think we come to those matters of standardization as we progress in the world. Eventually we get to the point where we see so many items that are similar, and yet not alike, that we feel that standardization would be helpful all along the line, and then we proceed to standardize.

For example, there was built up in this country a fertilizer industry involving a large number of formulas by different fertilizer companies. Some States I believe licensed as many as 30 or 40 different formulas for fertilizers. A few years ago we got the fertilizer people together, talked this matter over, and they all came to the conclusion that it was unnecessary to have so many different formulas for fertilizers, and so they started in on a standardization of these; and we brought them down until in our State we now license, I believe, 5 formulas instead of 25 as we formerly did.

Senator JOHNSON. That is a very excellent example of the objective in paragraph 11. Something might be done in the standardization of farm machinery that would be very helpful to the farmer?

Dr. ORTON. That is very probable.

Dr. BUCHANAN. May I interject just one statement?

Senator JOHNSON. Certainly.

Dr. BUCHANAN. There is no objection so far as I know on the part of the directors to paragraph 11 when the proper emphasis is placed upon "when in the public interest." You will note that it says, "to standardize, when in the public interest." We simply feel that it would not be in the public interest to overstandardize things like research techniques and so on, where the field is still wide open. Isn't that a reasonable statement?

Dr. ORTON. Yes.

Senator JOHNSON. In other words, you don't want to stifle competition?

Dr. BUCHANAN. Precisely that.

Dr. ORTON. Point 4—section 1, item (11), page 4, line 21:

and to coordinate the activity of these facilities and personnel, where necessary, in the national interest.

The intent of the wording proposed under this section should be clarified from the standpoint of its possible effect upon the research programs of the agricultural experiment stations which are based primarily upon local problems. However, attention is frequently given to problems of regional and national interest, as already pointed out. It should be emphasized again that through a long period of years a voluntary and cooperative system of coordination of research

Digitized by Google

in agriculture has been developed between State and Federal agencies operating in this field.

It is also pertinent to call attention to the fact that the agricultural experiment stations have carried on cooperative investigations with industry over a long period of years.

Dr. SCHIMMEL. Would you differentiate between a peacetime period and a wartime period as to the need for Federal coordination, and the degree of such coordination?

Dr. ORTON. I think the necessities of war naturally bring us into more active coordination of our activities. We have been doing this coordination for years, but at the present time I should say that it has increased 50 to 100 percent, perhaps, since the war.

Dr. BUCHANAN. Easily.

Mr. COLLINS. I take it you feel that there is a great deal to be learned from the type of coordination that has already been worked out and developed through the years in your own organization?

Dr. ORTON. Oh, yes.

Dr. SCHIMMEL. Your emphasis would be presumably on voluntary coordination, where the people who are being coordinated and the coordinator have no compulsory powers with respect to one another; but that any coordination which is achieved is the result of give and take between the two parties involved?

Dr. ORTON. That is right.

Dr. SCHIMMEL. Now assuming that there was a limitation placed upon this during peacetime, would there be room for a more rigorous interpretation of "coordination" during wartime?

Dr. ORTON. Well, just what do you mean, may I ask, by "rigorous"?

Dr. SCHIMMEL. If you have an agency of this type, would it be justified in giving directives to organizations like yours, rather than just coming to you and trying to work out something of a voluntary character?

Dr. ORTON. Well, the central Federal organization, I expect, would have a perfect right to do that.

Dr. BAVER. May I make a statement in that regard?

Senator JOHNSON. I would be very happy to have you.

Dr. BAVER. I might give you an illustration of what has happened as a result of the war effort. All the experiment stations in the country, in cooperation with the Office of Experiment Stations, have what they have called streamlined their entire research projects to the war effort, with the exception of those fundamental things that you have to carry on so that you don't lose ground.

Mr. COLLINS. Can you give us an idea of the percentage figures?

Dr. BAVER. Between 75 and 80 percent; I believe it is 77 percent.

Mr. COLLINS. That is the percentage of your work that is now on a war basis?

Dr. BAVER. That is right; and the other 23 percent is on the fundamental stuff that we have to do as we go along.

Mr. COLLINS. Is that in terms of money, personnel involved, or number of projects?

Dr. BAVER. That is in terms of projects, of the work.

Now that has come about on a voluntary basis and the type of cooperative set-up that we have, which was successful through long years of experience working together, makes it easily possible to do that; we don't have to have directives.

Digitized by Google

Dr. SCHIMMEL. Your experience, then, would suggest that where you have voluntary cooperation existing in peacetime, it is perfectly adequate for wartime situations?

Dr. BAVER. It proves so in our case; yes, sir.

Mr. COLLINS. I take it that you regard the coordination about which you have testified as having certain exemplary features for sectors of the economy other than agriculture, that you have led the way in certain respects in promoting coordination of research, more so, perhaps, than has been done in industry?

Dr. BAVER. I say that we are not perfect but we feel pretty proud of the progress we have made.

Dr. SCHIMMEL. Isn't it true, then, that the basis of the peacetime coordination of your work was its dependence on public funds and your recognition that you must coordinate it both to the local and national interest at all times?

Dr. ORTON. Our whole background is one of performing a service for the public good. The minute we have information that we feel is sound it is released and becomes public property. We have nothing to cover up. And I think that is one of the features that enables us to do these things in a voluntary way. We haven't anything to fear that somebody is going to lose his investment because we have disclosed some discovery we made.

Senator JOHNSON. You feel then that coordination need not come down from above?

Dr. ORTON. In our case.

Senator JOHNSON. That it is a natural development?

Dr. ORTON. In our case.

Dr. CORBETT. I believe, Mr. Chairman, I could answer that question a little more specifically with an actual illustration.

The Northeastern Experiment Station directors, including 12 States, meet several times a year, and if I recollect correctly—this is very close to the correct date—in January 1941, which you will notice was some time before Pearl Harbor, these directors suggested that they set up a committee, and a committee was set up, and I was chairman of it, to streamline and coordinate the work of the stations in the light of what we expected to happen. That was anticipation, and that came from the individual stations, and we believe that that is the sound way for it to come, from the local people, and come on up, and we think we led the parade in anticipating what was going to happen.

Mr. COLLINS. How much of a switch from peacetime work to war work resulted in that ensuing year?

Dr. CORBETT. I recall that in November 1941, at the national meeting of the station directors, a paper was given on this subject and it was discussed quite a bit, and already a considerable percentage of change had been made.

Mr. COLLINS. We wouldn't expect much of the 77 percent that Dr. Baver has mentioned to have been made before Pearl Harbor, but some of it was?

Dr. CORBETT. Yes.

Mr. COLLINS. I take it that you believe that coordination should operate both on the local level and on the national level?

Dr. CORBETT. That is right.

Digitized by Google

Mr. COLLINS. Perhaps this bill should have spelled out more fully the desire that Senator Kilgore had to promote regional coordination. He feels very strongly about that. It is implicit in the bill but I don't know that it is spelled out as much as it could have been.

Dr. ORTON. We thought that it ought to be a little more explicit.

Dr. BUCHANAN. May I make one suggestion? It is possible that in war emergencies items which can be handled most adequately by the agricultural experiment stations would be unknown to the stations. Certainly it is the duty of some Federal or national agency to call that matter very forcibly to the attention of the stations. Then if there was any disposition on the part of the stations to refuse to go along on something that was significant and of war emergency character, there certainly should be some power to handle a thing of that kind. None of us would dispute that at all.

We believe that the more nearly the approach to the stations could be patterned on the approaches that have been developed, the more satisfactory and the quicker would be the response.

Senator JOHNSON. And you would confine that entirely to time of war?

Dr. BUCHANAN. I believe, Senator, I would from the standpoint of, shall I say, enforcement. Certainly it is the duty of any Federal agency that sees a problem that can be solved by the coordinated activity of our stations to present it to us, and if there were a refusal to do something, to get into some field which manifestly was for the good of the Nation, there ought to be some power to get us lined up.

We believe that the reaction would be such that any force or directives would be quite unnecessary, at least that has been our experience in the past. We have never had any occasion of that kind arise—perhaps I should put it that way.

Senator JOHNSON. In time of war, and wars are conducted by the Federal Government, we naturally anticipate and expect directives—and if we don't, we should; we simply have to have directives, there has to be coordination throughout.

Dr. BUCHANAN. That is right.

Senator JOHNSON. In a totalitarian war—and that is the kind of wars we have. So you would anticipate a directive in time of war?

Dr. BUCHANAN. Yes.

Senator JOHNSON. But in time of peace?

Dr. BUCHANAN. In general, I would say no; that the power to enforce might be questionable.

Dr. SCHIMMEL. May I ask you a question there, Dr. Buchanan? Would the bill seem adequate in that respect in that it provides that during wartime the proposed office could requisition facilities which were not being made available for war needs, by the determination of the office, but that this requisitioning power would be terminated immediately after the war?

Dr. BUCHANAN. Well, that particular topic I don't think has been discussed by the committee. My own personal feeling is that if there are unused facilities in time of war there should be the full power to insist upon the utilization of such facilities.

Senator JOHNSON. Of course, the Commander in Chief has that power.

Digitized by Google

Dr. BUCHANAN. That is right, and we wouldn't want in any way to say that there should be any exception made of the State facilities or experiment station facilities.

Dr. ORTON. I think that is correct.

Dr. BAVER. Along that line, Dr. Schimmel, I think this is true, at least it is in our institution, that we have 100 percent of our facilities used in that regard. As a matter of fact we are shy on facilities so far as doing some things that we ought to do, now. I believe that is probably true of every experiment station.

Mr. COLLINS. Is it true that your present facilities are 100 percent in use?

Dr. BAVER. That is right.

Dr. ORTON. Point 5—section 3, items (c) and (d), page 7. Item (c) refers to the establishment within the Office of a National Scientific and Technical Board; and item (d) to a National Scientific and Technical Committee.

These paragraphs establish a National Scientific and Technical Board and a National Scientific and Technical Committee. In spite of the fact that a large part of all of the research now under way in the United States is conducted in educational institutions, no mention is made of a representative from these institutions on either body. Agriculture is not given representation on the National Scientific and Technical Committee.

Senator JOHNSON. Pardon me just a moment, I didn't quite get that point, Dr. Orton. I notice in line 11 it says—

and to include one representative each for industry, agriculture, labor, the consuming public, and two additional members at large who shall be scientists or technologists.

What was your point?

Dr. ORTON. That the educational institutions are not mentioned here, that is the universities.

Senator JOHNSON. Agriculture is but educational institutions are not?

Dr. ORTON. Agriculture is in paragraph (c), but is not in paragraph (d), and the universities are not mentioned in either.

Dr. SCHIMMEL. It might be interpreted as being represented in section (d) if you interpreted the phrase on line 2, page 8, "in the major fields of production and service" as including agriculture as one of the major fields of production and service.

Dr. ORTON. That might be so. We wanted to call attention to the point.

Senator JOHNSON. I think that is a very good point.

Dr. ORTON. Point 6—section 4, item (b), page 8, line 24:

To formulate and promote projects and programs for the development and use of scientific and technical facilities and personnel and, when necessary, to initiate and carry out such projects.

According to this section, the powers of the Office of Scientific and Technical Mobilization include the following—which I have already quoted. When this item is read in connection with sections 2 (a) and 2 (b), under "Definitions," page 5, the sweeping nature of the bill in its relation to educational institutions and the agricultural experiment stations included, becomes fully apparent.

Digitized by Google

Many fundamental questions of States' rights and Federal-State relationships are involved. We think the bill should be clarified in this respect.

Dr. SCHIMMEL. What sort of questions are they?

Dr. ORTON. Dr. Buchanan, I am going to refer that to you.

Dr. BUCHANAN. I don't know why you say, "to formulate and promote projects and programs." We have already a well-developed technique for doing that type of thing. Suppose we talk of peacetimes at the moment. We will recognize without argument that there are emergency matters in wartime that transcend all of this discussion. But the formulation and promotion of projects and programs requires an amount of cooperation on the part of the State agencies that are involved in this case, and of educational institutions, and it practically says that in spite of the reaction on the part of the agency with which you are negotiating that it is possible, when necessary, to initiate and carry out such projects.

In other words, we feel that we need to emphasize the two-sided nature of the contract in such cases; that a directive in peacetime to an educational institution or to an agricultural experiment station, ought to be based upon approaching that institution and endeavoring to work out a satisfactory relationship. If there is refusal on the part of such institution to undertake such desirable or necessary work, there could, of course, be no possible objection on the part of that institution for some other agency to go ahead and initiate and carry out such projects.

We are genuinely interested in being sure, all along the line, that adequate use is made of the facilities which are at hand. I am sure that is in the minds of the drafters of the bill.

Dr. SCHIMMEL. If this were for the formulation and promotion through existing agencies of voluntary projects—that would fit in with your personal thought on the matter?

Dr. BUCHANAN Yes.

Dr. SCHIMMEL. And if this office were not able to get, shall we say, takers on these national projects which it formulated and tried to promote, and were given the power to carry out and initiate the project itself, that also would fit in with your thought in the matter?

Dr. BUCHANAN. Certainly; otherwise it would be a dog-in-the-manger attitude which we wouldn't be justified in taking at all.

Dr. ORTON. Point 7—section 4, item (c), page 9, line 3:

> To foster and develop scientific and technical methods, to promote their application in the national welfare, either within the office or by other auspices, public or private, and to promote and provide training and participation in science and in its application.

The land-grant colleges, and particularly the agricultural experiment stations, have been and are now engaged in promoting and providing training and participation in science and in its applications. It is believed that persons qualified to judge are in agreement that these institutions have achieved a distinguished record of accomplishment in these endeavors.

It is not clear what is meant by the broad language "to promote and provide training and participation in science," nor is it clear how such promotion and provision would supplement, compete with,

Digitized by Google

or displace the already operating and effective programs of these institutions.

Mr. COLLINS. Your feeling is that carrying out this power should not interfere with the existing programs as they are now in effect?

Dr. ORTON. That is right.

Senator JOHNSON. It is Mr. Collins' idea that most of the Federal funds going into research have been made available to agriculture. I think probably that is true, and you have worked out a very sensible, realistic program, and a very effective one. Now with that experience back of you would you say that research should also be carried out by the Government into industry and manufacturing and transportation and other fields of endeavor, based on your experience with governmental—both Federal and State—assistance and aid and direction?

Dr. ORTON. It would be a very interesting experiment. I don't know how successful it would be. This research in agriculture is something that started back in the early days and has developed to the point where everybody has accepted it. The farmers, and so on, take it almost for granted that this help is available to them.

For some reason that I don't know, industry developed its own research organizations, and it has been placed on an entirely different basis. Whether you could transform and bring them into line with our plan in agriculture isn't clear to me.

Senator JOHNSON. I think that is getting right at the very fundamentals of this bill. Governmental funds have accomplished great things in agriculture.

Dr. ORTON. Without a doubt.

Senator JOHNSON. Now this bill wouldn't, of course, take away any of those blessings. But whether or not that same sort of assistance should be given to other fields is the very point of this whole bill, it seems to me.

Dr. ORTON. Well, I might point out that this bill cuts across two great segments of research, the research of private industry and the research of a public nature, such as the experiment stations. Now it is that sort of a cleavage, you see, that interests us. We are on the public side of the thing and here is another whole group of research agencies over here, industry and so on, that are not carrying on their program in the same way that we carry on ours, with relation to the public. But the bill doesn't differentiate between the two.

Mr. COLLINS. I am sorry you could not have been here on Monday when a witness testified to the fact regarding industry that there are no research facilities available for 150,000 small businesses in this country. You have just said that there is hardly a farmer in the country who has not received, in some small part at least, the blessings of agricultural research, but nine-tenths of industry, numerically, has no place to go for research.

Senator JOHNSON. That is probably one of the reasons that small industries are disappearing; they are not able to maintain their progress through research, and they simply have to fold up. Probably the same thing would happen to agriculture if it were not for the research and assistance that has been given by this wise policy; agriculture would gradually drift into the hands of a few, and the

Digitized by Google

workers would either be serfs or they would be directed by large combinations.

Dr. ORTON. There is a very good reason, I expect, for the present relationships. After all, we are dealing here with research in agriculture, with a basic resource, the soil and its products, and from the standpoint of its products, the survival of our entire population.

These industries are all built on the foundation of these basic resources. Without these basic resources they couldn't exist. They are things that man develops.

Now it is essential, it seems to me, that the basic materials be supported as they have been supported. I think our forefathers who devised this agricultural research program had precisely that thing in mind; they wanted to set up a basic organization here from which the basic industries would benefit.

But when it gets into industry itself, industry is expected to carry on its own research. A thing that man develops himself he ought to be able to carry on.

Senator JOHNSON. When we think of industry we are too apt to think of the very large industries, but we have a great fear in Congress, and I think in the country, as to the future of small business and small industry. Small industry is having to fold up and disappear.

Now a farmer, even if he has but one acre of land, has at his disposal the same research advantages as the farmer farming 100,000 acres. That isn't true of industry at all.

Dr. BUCHANAN. I would like to make one observation. Of course our Department of Agriculture and our system of experiment stations are relatively old from the standpoint of research. The departments which have to do with labor, with commerce and similar departments are relatively young.

Might it be too much to hope that in connection with these departments there might be similar developments, or through some other agency, with facilities for doing the kind of things you suggest, that is actually servicing the smaller agencies which of themselves can't do the business?

You have put your finger on the nub of the matter when you say that the farmer himself is ordinarily handling a business that is too small to justify his own participation in research, but government steps in and has provided him with the facilities which he has come to trust and depend upon. Well, now, Government hasn't, apparently, done that kind of thing for small industry.

Dr. CORBETT. Might I suggest another difference that is bothering me and possibly the rest of the group; it was implied in Dr. Schimmel's question about transferring the fruits of what we have learned to other groups.

I think the essential thing that bothers us is that our development has been on a grants-in-aid basis with the initiation of the problems coming up from the farmer. You are proposing quite a different program for the help of industry. I think if you were to enact a law which would have the same policy and the same point of view, we could much better answer your question. There is quite a change, you see. We don't know how it would work on a centralized basis. Does that help to clear up the difficulty?

Digitized by Google

Senator JOHNSON. That is a very valuable illustration and it is fundamental to an understanding of the bill, whether this bill is starting in from the top, with directives, or whether you are going to provide a natural expansion from the bottom up.

Dr. CORBETT. That is what our experience has been, and we think it has been a very fruitful and successful experience. So we don't know how to answer your question because this is new and it is a different point of view.

Dr. BUCHANAN. While we are dealing in the agricultural experiment stations primarily with farmers and with agriculture directly, nevertheless inevitably our researches frequently lead into the field of business and sometimes of big business, because we are interested in the processing of agricultural products; we are interested in the packers, the small packers and the large packers; we are interested in those who use corn, the corn millers, and so on.

Senator JOHNSON. That is true in my State in regard to the cultivation of sugar beets.

Dr. BUCHANAN. Yes; that is an excellent illustration of exactly that thing. In other words, the experiment stations do get into contact with many businesses, and we find that in those particular groups there is frequently, even though the business is quite small, the tendency to bring the problem to the experiment station to help get the solution. There is some help being given to small business through our stations, in appropriate fields, but there still is—I think you are right—a large area in which small industry is not adequately served at the present time.

Dr. ORTON. Point 8 — section 4, paragraph (m), page 11, line 3:

> To make, amend, and rescind appropriate rules and regulations to carry out the purposes of this act and all the powers and duties vested in the office, which rules and regulations shall have the force and effect of law.

Because of the inclusive nature of the concept stated throughout S. 702, this paragraph would place almost unlimited power over all research, whether public or private, in the hands of the office, which means in the hands of the board of seven men. Since most believers in democracy feel that education should be the last of our Nation's activities to be centrally controlled, and since research is the fountainhead of progress in education and human knowledge, the exact effect of this provision should be known. The powers should be made specific rather than general and sweeping, we think. The many fine accomplishments in general education and research should be safeguarded and conserved.

It is believed that it is the intention of the authors of S. 702 to achieve these ends, but such cannot be assumed unless specifically stated in the law.

Senator JOHNSON. I think your point is very well taken. Of course I had nothing to do with the preparation of this bill, but it is my opinion that clause could never get through Congress at the present time.

Dr. ORTON. That is all I have, Mr. Chairman.

Dr. CORBETT. Are there any further questions you would like to ask Dr. Orton? If not, the third statement which is a summary statement, will be by Dr. Baver of North Carolina.

Digitized by Google

STATEMENT OF L. D. BAVER, DIRECTOR, AGRICULTURAL EXPERIMENT STATION, NORTH CAROLINA STATE COLLEGE, RALEIGH, N. C.

Dr. BAVER. In our summary statement, Senator, we have tried to boil down as follows all that Dr. Buchanan and Dr. Orton have said:

In view of (1) the long history and pioneering effort of agricultural research in the land-grant institutions, in cooperation with the United States Department of Agriculture; and (2) the success of the present well coordinated research program in agriculture, we would like to summarize several points relative to S. 702 which, as Dr. Buchanan has already mentioned, should not be construed either for or against the bill.

Point 1. In light of the examples that Dr. Orton has mentioned, it is obvious that there is need for more clarification and more specific language in the wording of the bill.

Point 2. Since apparently it is not the intent of S. 702 to disturb existing agricultural relationships between Federal and State agencies, there should be a specific clause in S. 702, to the effect that nothing in this act shall be construed to be in conflict with, or to nullify, any relationships, projects, and/or cooperative efforts between Federal and State agricultural agencies.

Point 3. We wish to call attention to the fact that the present coordination of agricultural research between the Federal Government and the States, as well as among the States themselves, is the outgrowth of years of experience in which the goal of both State and Federal agencies has been to foster research solely in the interests of the public. The success of these researches has resulted largely from freedom of individual initiative in a coordinated program. Moreover, research has been productive because of the nearness of the scientist to the problem.

Point 4. On the assumption that S. 702 contemplates centralization of all research activities and personnel, it is very questionable whether progress will result from any centralization of the educational facilities, particularly research, of the established institutions, which have been the backbone of our scientific developments to date. This is clearly evident from the fact that there are great variations in both regional and local conditions which of necessity make research requirements varied in order to serve the public most efficiently. Moreover, these agricultural research institutions must be concerned with fundamental as well as applied research, and they must also undertake operational studies to insure the maximum usage of the research information that they find out.

Dr. CORBETT. That completes our statement except to answer any questions.

Senator JOHNSON. Dr. Baver, in regard to the four points that you have just made, are the results of the research that you develop put to practical use in nearly every instance?

Dr. BAVER. The results are put to practical use, but not by everybody. You know that you don't get all farmers to do what they ought to do. But the results are put to practical use. You can always count on the better farmers of the State getting hold of developments immediately. As a matter of fact a lot of farmers like for

Digitized by Google

us to come out and use their farms as a demonstration so that they can get hold of it before anybody else, so that they can maybe get a year on their neighbor.

Senator JOHNSON. As a matter of fact you rather follow than lead in many instances? That is, a need for something develops on the farm—to combat some insect or to get away from certain diseases, or to improve the strain of some kind—that need is felt by the farmers before you ever undertake to consider it?

Dr. BAYER. Yes; in a large number of cases; but then also we try to lead. May I give a specific illustration of that in North Carolina?

Senator JOHNSON. Please do.

Dr. BAYER. Our farmers are sold on a certain grade of fertilizer which they buy in large tonnages, but which we feel, on the basis of our research, is not the most efficient fertilizer. Consequently we try to lead the farmers into the use of a more efficient fertilizer, and the good ones respond, and the poor ones come along as they see the good ones do it.

Senator JOHNSON. Thurman Arnold discussed here the other day the role of monopoly and the cornering of patents with respect to technological development. Has that type of industrial operation affected agriculture?

Dr. BUCHANAN. Decidedly. If I might make a suggestion, inevitably in the work of the agricultural experiment stations, as in the laboratories of land-grant colleges and all educational institutions, there are many new things developed which are patentable and many of them are patented. Now in many of the institutions there has been set up a public service type of corporation for handling these things, as we believe, to the best interests of the public. I believe that Dr. Orton stated in his testimony that there had been developed 28 of these, and others are in process of development at the present time.

These are set up in such fashion that a professor or a worker in the experiment station who discovers something will get approval for patenting, the ownership of the patent will be transferred to the foundation, and it will be administered there, we believe, in the best interests of the public.

In some cases—but by no means in all—there are considerable profits. Some of these foundations have accumulated profits of as much as millions of dollars. These are reinvested directly in research for the public good. In other words, these constitute public trust funds on the State level.

There has been a good deal of discussion as to the best possible use of these patents. In many cases the patents are simply thrown free to the use of the public as where it is obvious that the use would at once become automatic and widespread. In many cases nonexclusive licenses are issued. There are, however, some instances, in which it is believed to be in the best interests of the public that exclusive licenses be issued.

For example, perhaps there is the development of some particular kind of agricultural machine that is applicable to some operation in sugar beet raising in Colorado and has very little application elsewhere. Obviously you can't get a large number of manufacturers to engage in the production of a machine which would have only local application. In cases of that kind I think you would find that ex-

Digitized by Google

clusive licenses would be granted, in the belief that it is in the best interests of the public to have a patent actually in use, rather than have a patent which, because it is thrown open to everyone, would not be used by anyone. And you will find, I think, other examples of that type.

Does that answer your question?

Senator JOHNSON. Yes. It so happens that in Colorado at the present time the colleges are working with implement companies in developing labor-saving devices, and are going right along with them. Of course, the advantage will extend to agriculture and to the public, and yet there will be an advantage to the private implement company, too.

Now, I wonder if that method of patents and restraints applies also to improved strains of grains and livestock?

Dr. BUCHANAN. Under the patent laws at the present time, you will recall, it is possible to patent certain kinds of plants that are reproduced vegetatively, that is, not by seed. Nothing that is reproduced through seed can be patented.

A new rose could be patented because it can be propagated asexually, just as a new variety of apple can be patented. I believe that the law excludes potatoes, but there are two or three things that are specifically patentable.

I believe that good practice on the part of an institution that develops a new apple, for example, would be to see to it that something that is desirable really gets into the hands of the nurserymen on a sufficiently wide basis so that it will become immediately available. I can see no reason in the world why an exclusive patent for the use of a particular apple should be given to any nurseryman.

Senator JOHNSON. Of course, that is just one other fundamental difference between agriculture and industry, and it is a very significant and important point also.

Dr. SCHIMMEL. Would you say that the experience in agricultural research has shown that at least in that one field public funds can be spent with great advantage to both producers and consumers?

Dr. BUCHANAN. Certainly. In the Department of Agriculture and the experiment stations public funds have been spent to the advantage of both producer and consumer. I have already given the illustration of the advances that have been made in nutrition at the University of Wisconsin in the agricultural experiment station; and there is the work that is being done at Cornell University in the nutritional laboratory. Things of that kind are advantageous both to producer and to consumer.

Dr. SCHIMMEL. Would you say that the voluntary cooperation features of the bill with the funds provided would work in most instances except where you feel they might impair the activities of your own experiment stations?

Dr. BUCHANAN. I would say that to the extent that there is no interruption of operations; with organization, with facilities, which are already efficiently operating there is no point to interference at all. There are certain areas, I think, in which the grant-in-aid principle is implicit—I think in several places in the bill. It is entirely possible that that grant-in-aid principle would function advantageously there.

Digitized by Google

For example, suppose that in the operation of the experiment station we made some discovery that would enable us to manufacture more economically or profitably or satisfactorily some agricultural product into food, or suppose we found some better way of extracting soybean oil. A bottleneck in getting that thing into use might be the development of a satisfactory pilot plant. In some cases, obviously, one would go to industry and say, "Now, here is something"—in some cases we have industrial groups, that is, associations, made up of all of the individuals, all of the organizations in a particular industry—"that is significant to the industry; this ought to be tried out on a pilot plant scale; will you help us out?"

Sometimes that will happen. In other cases it very possibly might be best for the interest of the public that another approach be taken and that the control be kept in the State or in the Federal Government until it really was ready for release as a finished product. In other words, the grant-in-aid principle for things like pilot plants in my opinion might be advantageously used.

Dr. SCHIMMEL. You are well known as having done a significant work in developing rubber from agricultural products, about which you have testified before Senator Gillette's committee.

Did you find, in connection with the development of rubber from agricultural raw materials, the same interest on the part of private industry that they evidenced in the development of rubber from petroleum raw materials; or did you find that it would be necessary for the Federal Government to carry through on that?

Dr. BUCHANAN. I think some explanation would be in order there. Through the work of the institution at Ames, partly in the agricultural experiment station and also in the engineering experiment station in our department of chemistry—this isn't an exclusively agricultural experiment station matter—some leads were developed which we believed might make possible the utilization, not only through the alcohol but through other fermentative products, of corn for the production of rubber; 2–3 butylene glycol, for example, can be produced directly by fermentation of corn, and theoretically that should be convertible into butadiene.

Another process, of course, is the production of alcohol by fermentation, and the catalytic transformation of that into butadiene for the manufacture of rubber.

In our actual experience we would have been helped, I think, a good deal by sufficient funds to have gone ahead on a pilot-plant basis. In this particular case, however, through the development of the regional laboratory at Peoria, there was open a Federal device for handling that, and at a particular step in the process the thing was simply transferred to the Federal laboratory, and I think they have been carrying on a very excellent series of studies there.

Does that answer your question?

Dr. SCHIMMEL. It seems to me that there is a real difference, and I wondered whether you had actually observed such a difference in your experience? In the case of the petroleum raw material I believe I could name offhand five companies that have spent hundreds of thousands of dollars in developing rubber from that raw material, and very often they have been the companies that are concerned with taking that raw material out of the ground. For example, Standard Oil spent a great sum of money on that and the rubber companies them-

Digitized by Google

selves, through chance or their own personal interest, or through some agreement with Standard Oil and other oil companies, have been cooperating very closely in their research programs with the oil companies.

Dr. BUCHANAN. That is right.

Dr. SCHIMMEL. Do you feel that there is a monopolistic situation—of the type that was described by Thurman Arnold—which is such that for agriculture to get a break in research the Government must step in and provide the funds?

Dr. BUCHANAN. I think that is a good statement of the case. I think that in cases of this kind the only way to get development, at least sufficiently rapid development, is by Government participation.

Now as to the origin of the funds, whether they should be State or Federal, or as a grant-in-aid or a special appropriation, whether it should be done in one laboratory or another, that is quite a different proposition. But the general principle, I think, is valid, that there are certain areas in which there will be no development, sufficiently rapid at least, unless there is direct governmental participation through the pilot-plant stage to the proof of the adequacy of the invention.

Senator JOHNSON. Of course, the Government furnishes the money in both instances. Industry simply takes it out of their income tax.

Dr. SCHIMMEL. During a war period certainly.

Senator JOHNSON. During peace periods or any other periods.

Dr. BUCHANAN. That is, it is counted as part of the expenses of operations; that is right.

Senator JOHNSON. Yes; and it is not subject to income taxes.

Dr. BUCHANAN. No.

Senator JOHNSON. So the Government is doing most of the financing in any case.

Dr. SCHIMMEL. But is not directing the investigation.

Senator JOHNSON. No; in the one case industry owns what is developed and in the other case it belongs to the public.

Mr. COLLINS. Was hybrid corn developed through the work of the experiment stations?

Dr. BUCHANAN. The work that led to the development of hybrid corn was done at the New Haven, Conn., experiment station.

Mr. COLLINS. Is it true that a great deal of the experimental work in that was done by private farmers?

Dr. BUCHANAN. No. The initial development of hybrid corn was made almost entirely by the experiment stations and the Federal Government, up to the point of realization of its economic value. Since that time many private firms have taken it on and are doing excellent work, but the initiative was with the experiment station.

Dr. ORTON. The principles were all worked out by the experiment stations.

Mr. COLLINS. In other words, the development was done by the experiment stations but it did not hamper the commercial exploitation of this new development by a great many different commercial firms and farmers and so on?

Dr. ORTON. That is right.

Dr. BUCHANAN. May I make one other observation in that connection? It is quite important, we feel—even though private industry at present can go ahead with the program on a satisfactory basis—

Digitized by Google

that the experiment station keep a finger in the pie. In my own State, for example, there are five or six large concerns that produce the hybrid corn planted on perhaps 50 percent of the acreage in Iowa. In addition there are four or five hundred small farmers who have taken up corn breeding and who get their stock material regularly from the college. I think that the participation of this group of four or five hundred smaller growers—they pay for what they get, it isn't given to them in any sense—and the continuation of the experiment station in this field quite prevents the development of anything in the direction of a monopoly in seed corn.

Dr. GUTERMAN. The point that Dr. Buchanan made about the experiment station keeping its finger in the pie is, I think, important. In the case of our own State, for example, we have developed a double-crossed hybrid silage corn which has increased the production of silage on the farm by approximately 25 percent.

Now we maintain at the station the parent seed stocks, or the four inbreds from which this double-cross corn is obtained. By having control of those four inbreds, at any time we get a new strain of double-crossed corn which is better than 29–3, we can take 29–3 right off the market and substitute the new one. Now if the inbreds were allowed to be grown and produced by seedsmen over the State, when we got a new corn that was better than 29–3 it would be impossible to get the other one off the market. And for that reason, I think it is important that the station operate in that way.

Mr. COLLINS. What percentage of the personnel of the stations has been lost to the military services or to war industries?

Dr. BUCHANAN. I am going to ask you to remember that in an institution that is conducting both research and education, there are individuals employed on different bases. For example, I suspect in every institution there are individuals employed on a fellowship basis, which means that they spend some of their time in the work of the institution and have a good deal of freedom for continuing other work. They are not full-time employees. We have assistants and graduate assistants, and so on, who are on that basis.

If you count all individuals we have lost, I suspect, perhaps a third—would that be reasonable, Dr. Secrest?

Dr. SECREST. A little high.

Dr. ORTON. About 20 percent in our institution.

Dr. BUCHANAN. I think it would be about 25 percent of the total personnel, but not 25 percent of the full-time workers. We have been able to retain the key men reasonably well, but of course the younger men have been called into all sorts of services, and should be.

Mr. COLLINS. What percent of the employed time, would you say, you have lost on a Nation-wide average?

Dr. BUCHANAN. I would guess 10 to 15 percent. But that is purely a guess.

Mr. COLLINS. Have you been able to make replacements of those in any way?

Dr. BUCHANAN. Yes. In Iowa the situation is that in particular fields student enrollment has gone down. That has been true in agriculture, because there has been no deferment of any kind. Men who are in the Reserves and are in agriculture are called to the service. If

Digitized by Google

they were in physics or in chemistry, there would be the insistence that they remain in the institution until they had completed their work. So that the loss of students isn't uniform at all in the various fields.

It happens in our institution that the number of students dropping out for these various services has been great in agriculture and elsewhere. In many cases individuals are employed part of their time in research and part in teaching. We have been able to compensate reasonably well by taking over the full time of those who otherwise would be teaching part time.

Mr. COLLINS. What do you suppose, in employed time, is the net loss due to the war effort of those employed in research stations?

Dr. BUCHANAN. From the standpoint of what is actually being done in Iowa, I would say it is nothing. I mean that at the present time, I think the amount of work being turned out is equal to the amount done in peacetime, because we have had these compensations. I think that the case of the agricultural experiment stations is somewhat different from what you will find in most instances. I know that in the engineering experiment station of the college at least two-thirds of the personnel, of the total time, has gone completely.

Mr. COLLINS. You feel you haven't suffered any net loss?

Dr. BUCHANAN. I am speaking for Iowa, and I think that is true.

Mr. COLLINS. Does that check with the experience throughout the country?

Dr. GUTERMAN. I think at our institution that would not be true, because under our system we use in connection with our work a large number of what we term "graduate-student assistants." We have a permanent member of the staff and we supply him with two or three or four of these graduate-student assistants. Now we have lost large numbers of those younger men.

Mr. COLLINS. What percentage would you say you had lost?

Dr. GUTERMAN. I wouldn't want to say. I can give you an example. In our department of entomology, for example, since the 1st of January, they have lost 50 graduate-student assistants. Now that isn't quite as bad as it sounds, because when we lose a man, when he is drafted or volunteers, we try to get another one. But I do think that at least as far as my institution is concerned, we are unable to do certain items of research which we would like to be doing, due to the lack of help in this category.

Dr. CORBETT. I wonder if this illustration would help? The Maryland station has approximately 125 people above what we call the graduate student or assistant level. Out of that whole group that are on the pay roll, I don't believe there are 5 that are on full time. The rest of the time they are spending in the teaching classroom, and some do some extension work. The Senator knows, of course, about agriculture extension work. What we have done, as we have lost personnel, is just as Dr. Buchanan has indicated. We have shifted the people over from the teaching staff onto the station, and the net loss in activity is virtually nothing.

Mr. COLLINS. Is that true in your case, Dr. Baver?

Dr. BAVER. Just about. We have had to stop none of our projects. Some of us are working longer hours.

Mr. COLLINS. What is your experience in West Virginia?

Digitized by Google

Dr. ORTON. I would say we have fallen behind in West Virginia. We have two or three replacements of important personnel that we have been unable to make. It might be not over 5 percent, perhaps.

There is this other point, that in this transfer that we are making there is some lost motion. It is pretty difficult to say just how much. You ask a man to go in and take a position who is inexperienced in this particular line, perhaps, and yet has had background that enables him to do the work. He can't step into the position of the man that has gone out, an experienced man, and make the same headway that the other man made. There is a period of adjustment that slows him down.

Senator JOHNSON. You have a loss of results without a loss of personnel?

Dr. ORTON. That is right.

Dr. BUCHANAN. I think it should be emphasized that probably there never has been dumped into the laps of the men in the experiment stations more new and difficult problems than are being dumped at the present time. When we say that we are keeping up reasonably well in turning out results, I think that we should say also that we could use, perhaps, double the personnel that we have available at the present time. So that we wouldn't want to say at all that we are adequately performing the task.

Mr. COLLINS. Would you say that as a scientist you could see in this bill the possibility that scientists in general might be given a greater opportunity to contribute to the war effort?

Dr. BUCHANAN. I mentioned a moment ago that when we run into a problem such as pilot plant operation, where a specific grant-in-aid would enable us to do some particular thing, it might be exceedingly helpful. I think I could find a good many illustrations of that kind of thing. I don't know whether or not there should be, except for special things of that kind, an agency giving general grants-in-aid. That is, if I can't get enough money out of my legislature and Congress doesn't appropriate enough money to the Department of Agriculture, here is another agency to which we could turn in an emergency—and I am not sure that that is quite in the interests of good government to have too many alternatives of that kind. But certainly in certain particular kinds of circumstances, the grant-in-aid principle that is involved in the bill would be helpful.

Mr. COLLINS. It might enable the development of the farm chemurgical developments to a greater extent?

Dr. BUCHANAN. The farm chemurgical developments simply mean the utilization of techniques for the manufacture or new utilization of agricultural products. Now Congress has already established four large regional laboratories primarily for carrying on that work. We have in the experiment stations throughout the country a great deal of work of that kind going on. I don't know that I would want in any way to separate farm chemurgy from the normal operations of our experiment stations as something apart and different from what we have been doing all the time, and which we are increasingly enabled to do through the support that is coming to us from ordinary sources. But this pilot plant development would be exactly in line with what you are saying. It would be, shall we say, a chemurgy kind of a proposition.

Digitized by Google

Senator JOHNSON. But of course, you are watching the chemurgical development and are ready to take advantage and use and apply it?

Dr. BUCHANAN. May I say, Senator, I would turn the thing clear around, and say instead of watching it we are leading it.

Senator JOHNSON. I wish you would expand on that just a little, if you don't mind. What I meant was, the Congress set up these four plants that you have mentioned. Now you are watching the develoment in those plants?

Dr. BUCHANAN. That is right and in some cases we are feeding into those plants the things that originate with us.

Senator JOHNSON. That is what I want to know about.

Dr. BUCHANAN. Well, I mentioned a moment ago the development of 2-3 butylene glycol as a fermentative product which is being developed now by the regional laboratory at Peoria. Some years ago, 10 years or more ago, it was observed at the University of Wisconsin that one type of corn contained a starch different from the ordinary type. It had been brought in, as far as we know, from some place in China, apparently a sport of some kind.

When you put iodine on the starch of ordinary corn, it turns blue; when you put idodine on the starch of this particular corn, it turns a reddish purple. When you boil up the starch from the different kinds of corn, they have different properties. It became evident that when you boil the starch from the so-called waxy corn you get a gummy solution. If you do the same thing with ordinary corn starch and let it stand, it sets into a firm jelly. The characteristics of the waxy corn are quite exactly like those of tapioca.

There seemed to be the possibility here of developing a type of corn which would replace tapioca. At the Iowa station our chemists and corn breeders made a blueprint of what they wanted to do. They took the type of corn which yielded very few bushels to the acre and which had many defects; they crossed it with the inbreds which are used in some of our better hybrid corns, and developed a series of inbreds, crossed those, and we now have a hybrid waxy type corn.

That was done, shall be say, as an interesting stunt, and with the hope that it would prove of some practical value. Now our tapioca supplies are cut off. The United States normally imported about 350,000,000 pounds of tapioca.

Perhaps 125,000,000 pounds were used for purposes for which tapioca is superior to ordinary cornstarch. The other 200,000,000 pounds or so were used simply because it was cheaper.

Now here is a market at the present time for 125,000,000 pounds of this particular kind of cornstarch. The stamps on our envelopes and our gummed labels, and so on, are made from tapioca starch. Well, we have something to replace that at the present time. And the regional laboratory has been cooperating very actively in the development of the replacement uses of this waxy corn. This next year all of the seed that we have been able to produce is going to be used, about 3,000 or 4,000 acres of this waxy corn is being grown and we have been asked to produce enough seed to plant about 60,000 acres next year to supply that particular emergency need.

Now there, I think, is a case in which the regional laboratory and an experiment station have cooperated well in a development.

Is that the kind of thing you had in mind?

Digitized by Google

Senator JOHNSON. Yes; that is what I was interested in knowing, some practical way in which they were working together, and especially that the experiment stations were leading the four regional stations.

Dr. BUCHANAN. Suppose we say "partnership" rather than that. The initiative is in both places. In other words, neither the experiment stations nor the regional laboratories have a monopoly on scientific brains, and I think both agencies will make contributions.

Senator JOHNSON. But you are watching the research work developed by them very closely and applying it wherever possible?

Dr. BUCHANAN. That is right. Of course, the regional laboratories are just getting into full operation, they have had difficulties in priorities, and so on. I think they are fully going concerns and are doing an excellent job at the present time.

Senator JOHNSON. To clarify what I was getting at a little better, what would have happened to the development of waxy corn without these four pilot stations?

Dr. BUCHANAN. It probably would have meant that we would have had to put more money into it ourselves. In this particular case, industry itself was so interested that undoubtedly we could have gotten grants-in-aid directly from industry for doing the thing.

Actually, I think that it is on a much better basis for having had the cooperation of the Federal laboratory rather than having had the whole thing handled through grants-in-aid from industry.

Dr. ORTON. There is another point about this relationship that might be of interest, and that is that each of these Federal laboratories has an advisory committee made up of directors of the experiment stations within that region, and we meet once or twice a year with them and go over their programs.

Senator JOHNSON. That is very interesting and very important.

Dr. ORTON. It is working out very well, we think.

Senator JOHNSON. Dr. Corbett had an observation he wanted to make awhile ago, and he was very rudely interrupted by me. I apologize to him.

Dr. CORBETT. Not at all.

You asked about the chemurgic development. I think there is a bill in the House, H. R. 701, which is an attempt to further develop the chemurgic idea through the experiment sations. I think that Congressman Andresen introduced the bill, and the Chemurgic Council and the editor of the Farm Journal are the individuals who are really back of it, I believe.

Possibly the Senator would also be interested in noripol, which is one of the most interesting developments in rubber, I think, that we have in the country. That, I am quite certain, was developed at one of the experiment stations, and then taken on by the regional laboratory. It is an excellent substitute for rubber in many cases.

Dr. SCHIMMEL. I would just like to recall a bit of testimony that we had last December when Colonel Sanders, of the Selective Service, appeared before this subcommittee and strongly supported the bill; and on being asked for an illustration as to how it could be effective, he said he thought it would be most effective in agriculture, and he admitted that there was a great deal of agricultural research now going on, but he said that the agricultural people, due to lack of an over-all

Digitized by Google

viewpoint which would come from an agency which would be familiar with agriculture, industry, commerce, and transportation, and so forth, were neglecting the possibilities of labor saving through this industrial engineering technique we discussed before.

And Colonel Sanders estimated, as a matter of fact, that you could probably increase the efficiency of labor some 50 percent, and mitigate the present labor shortage in agriculture. He felt—and I was wondering what your opinion would be—that agriculture would be very glad to engage in such a program, but he doubted whether either the local experiment stations, the Extention Service, or even the Department of Agriculture itself would exercise sufficient initiative on this type of new research work, where he felt an over-all agency would exercise that initiative and the agricultural research groups would be glad to undertake the project once it was formulated.

Now I think it would be very interesting to have your comments with respect to this earlier testimony, which I hope I have represented accurately.

Dr. GUTERMAN. What kind of research are you thinking about specifically, these time studies and that sort of thing?

Dr. SCHIMMEL. Yes; some of which is already going on in a small way now.

Dr. GUTERMAN. We have already started some at our institution.

Dr. BAVER. We studied Colonel Sanders' testimony. Our general comments on his testimony is that it is rather confusing and does not provide the basis for the development of a sound plan to utilize effectively the resources of the farmer.

Dr. SCHIMMEL. I was thinking of the research aspect of it.

Dr. BAVER. I have a complete analysis of his testimony as it applies to North Carolina.

Mr. COLLINS. Is it in relation to this bill?

Dr. BAVER. In regard to his idea on farm labor.

Mr. COLLINS. Would you care to submit that for the record?

Dr. BAVER. No; I don't believe so.

(Discussion off the record.)

Dr. CORBETT. Senator, we would like to thank you for this very understanding hearing. I think I can speak for the group and say that every one of us is convinced that you have a sympathetic and real understanding of agriculture, and we appreciate it.

Senator JOHNSON. The committee wants to thank you.

I would like to explain to you gentlemen that as this is Saturday afternoon a great many of the Senators are out of town and Senator Kilgore, the chairman of this subcommittee, was also called away and couldn't be here.

However, we wanted this record for their benefit, that they may review it, and we want to assure you that it will be very carefully studied by a great many men.

Thank you very much.

Dr. CORBETT. Thank, you, Senator.

Senator JOHNSON. Prof. Harry P. Hammond, dean of engineering, Pennsylvania State College.

We are glad to have you here, Professor Hammond. I have some questions that I would like to ask, and receive your answers for the record.

Digitized by Google

STATEMENT OF HARRY P. HAMMOND, DEAN OF ENGINEERING, PENNSYLVANIA STATE COLLEGE

Senator JOHNSON. First, how can an inclusive Federal research organization secure the maximum benefits during the emergency through the facilities of the engineering schools?

Dean HAMMOND. I would answer that in this way, Senator, that I think the engineering schools of the country, by and large, should have the benefits of Federal support in somewhat the same way that the agricultural schools have had such benefits.

I hadn't intended to say this, but I will go on and say that for a period of 35 years the engineering schools have endeavored to establish somewhat the same sort of relationship with the Federal Government that the agricultural experiment stations have had. We have met with frustration—I think that is the right word—all along the line, partly due to the fact that in engineering there isn't any one group of colleges to represent the interests of research as the land-grant colleges represent the interests of agricultural research.

Now only recently have the engineering colleges of the country made common cause on this, and said there isn't any line of demarcation between the land-grant schools and the non-land-grant schools. The University of Michigan is just as much interested in research as Michigan State College, and the Colorado School of Mines is just as much interested in research as Colorado State College, and so on. So there has been established a central representative association, and we are hopeful that through that there may be established a working relationship between engineering schools and their experiment units, on the one hand, and the Federal Government, on the other.

Now I represent—not here today—but I happen to be a member and chairman of the committee on engineering experiment stations of the Association of Land Grant Colleges, and knew of such legislation from the early days of its proposal; that is, I appeared and testified before Mr. Maverick, and so I felt a responsibility to keep my committee informed about it; I am just saying this to explain my presence here.

I will now answer your question specifically. This bill, it seems to me, provides a number of very admirable features, but I think it ought to be scrutinized from the standpoint of, perhaps, the most unfavorable way in which it could be operated. I mean by that that it ought to be scrutinized from the standpoint of a small caliber bureaucrat being put in charge of the agency it creates as administrator of that agency. It seems to me, reading the bill fairly carefully, that there is a definite danger that the result that I think the sponsors of the bill want might not be realized. You put your finger on, for example, what I thought was the most dangerous clause, this one that gives the administrator——

Senator JOHNSON (interposing). That is page 11.

Dean HAMMOND. Clause 4 (m). That gives the administrator the authority—

To make, amend, and rescind appropriate rules and regulations to carry out the purposes of this Act * * * which rules and regulations shall have the force and effect of law.

Digitized by Google

That is the most dangerous provision of the bill, but I think there are others also that, under the type of administration which the colleges of the country have come to fear, might take place.

Senator JOHNSON. Of course, the Congress at the present time would never enact section (m); there isn't the slightest bit of danger that any such provision would be enacted into law at the present time. That was a customary practice a few years ago, but thank God it is no longer.

Mr. COLLINS. Could you develop at that point your feeling about the method of how an inclusive Federal research organization would or should or could secure the maximum benefits?

Dean HAMMOND. Yes. I think it could support, develop, and guide, but not direct research organizations. That is, I don't think that research is likely to prosper under direction.

Mr. COLLINS. You mean in the sense of giving orders from a central place as to whether you should drop "A" and do "B"?

Dean HAMMOND. That is right.

Senator JOHNSON. Do you like the pattern of the lang-grant-college formula?

Dean HAMMOND. You mean the agricultural experiment stations?

Senator JOHNSON. Yes; the agricultural experiment stations; do you like the pattern of that research development?

Dean HAMMOND. Yes; quite well. It has done a magnificent job, by the way.

Senator JOHNSON. I concur with you fully in that, but I mean how would that approach satisfy you insofar as engineering is concerned?

Dean HAMMOND. Very well.

Senator JOHNSON. That same approach?

Dean HAMMOND. Yes.

Now may I say this, that there is a difference that was brought out here this afternoon between engineering in relation to these problems and agriculture, and the chief thing that we have got to safeguard, so far as engineering is concerned, is the interest of the public. There is no other disinterested agency of research in this connection except these engineering colleges. The emphasis must be on the establishment of a research organization for the benefit of small industry; that is important. A few years ago I was connected with a study of this sort of thing in New York City, chiefly with respect to education, but research was a factor in it, we found that more than half of the industries in New York City has fewer than 10 employees. That didn't include the service industries, but only those that produced something. Over 80 percent of all the people employed in industries in New York City were employed by those who had fewer than 25 employees.

That is astounding; at least, it was to me.

Senator JOHNSON. Particularly, too, when you remember the war effort is being carried by the big industries; I am not certain of this percentage, but as I understand it, to the extent of more than 90 percent.

Dean HAMMOND. Of course, you have to discount what I have said somewhat, because a lot of those industries are millinery establishments, dress manufacturers, and so forth, but a lot of them aren't; a lot of them are little machine shops, and establishments like that.

Digitized by Google

What I am getting at is this: In only one State that I know of is there an organized effort to aid small industries through engineering research, that is in New Hampshire. All the rest of us can do jobs piecemeal for the big industries when they hire us to do them.

Mr. COLLINS. You feel that that would be one of the things that a bill such as this should concentrate on doing?

Dean HAMMOND. I put the interests of the public first, because there isn't any disinterested research group in existence now, so far as I know, except the colleges and a few such laboratories as the Mellon Institute. The industrial laboratories produce a good many things that are in the public interest and a great many of them—and they shouldn't be discounted—employ men like Irving Langmuir, who has done as much for the public, although he was an employee of the General Electric Co., as he would if he had been with a college. But by and large, these laboratories work for their companies; they don't work for the benefit of the public at large, directly, the way the agricultural experiment stations do.

Senator JOHNSON. That is an important point.

Now what specific problems do you face in your college regarding the mobilization of your engineering research facilities for the war?

Dean HAMMOND. First, our financial support is such that we can't maintain a strong central organization. We live too much from hand to mouth; that is, we earn most of our income by conducting research for industries or associations or societies. We get some of it from the State of Pennsylvania, of course, but it isn't sufficient to keep in existence a strong central organization.

Second, we are losing too many people to the armed services and to war industries. We lose our best men.

I was surprised that these gentlemen a few minutes ago didn't bring out the point that the men they lose are the most valuable ones.

Mr. COLLINS. That is the case with your people?

Dean HAMMOND. They are the ones that we lose. It isn't the older men, it isn't the divisional heads, but it is the young, brilliant fellows that the industry spots and says, "We will give you $6,000 a year," and he leaves. And incidentally, the Federal departments are the worst pirates there are on that, Senator.

Senator JOHNSON. I think they are to be excused, because they have the burden of carrying on the war.

Dean HAMMOND. Well, I don't want to keep you, but I couldn't quite agree to that, because when you say the "Federal departments," you usually mean some minor employee of the Federal department who doesn't see the whole picture.

Senator JOHNSON. To expand this second question somewhat, is it your opinion, then, that there is a distinct loss to the war effort in the failure to take full advantage of the engineering research facilities of the colleges?

Dean HAMMOND. Yes; I know it. I could cite cases of State after State, one by one, where the research facilities of the colleges aren't being used as they ought to be.

Senator JOHNSON. Turn to page 8, section 4, paragraph (a), line 19. How important do you think this is, and have you any suggestions on how it might be carried out?

Digitized by Google

Dean HAMMOND. Yes; I think it is quite important. I think it ought to be done systematically and periodically, but without burdening the colleges with very long and elaborate questionnaires. We have too many of them already, and it ought to be a fairly simple form of statement that we can make out quickly.

Senator JOHNSON. Can you give any specific example regarding questionnaires?

Dean HAMMOND. Well, we answered three within one week on the same subject, with relation to engineering research facilities, from different agencies.

(Discussion off the record.)

Senator JOHNSON. Now our fourth question: I believe you have some comment on section 7, paragraph (f); that will be found on page 18.

Dean HAMMOND. That is the same thing that I have spoken of before—

> The Administrator is hereby authorized and directed (1) to prescribe and promulgate appropriate rules and regulations which shall thereupon have the force and effect of law.

That is with reference to patents, and I think the same objection holds on that as to the other section that was mentioned.

Senator JOHNSON. Can you discuss how coordination of research activity might well be carried out both on a local and on a national basis?

Dean HAMMOND. Well, I believe it could best be done under the establishment of a regional organization which would know the problems of the district and the facilities of the institutions in it and then be able to bring the two together, instead of having the entire organization carried out from one central office.

Senator JOHNSON. You have no fear of regional governmental units?

Dean HAMMOND. Not if the whole bill is scrutinized with the danger in mind that I have already mentioned.

Senator JOHNSON. What percentage of your facilities now in use are in war work?

Dean HAMMOND. All of them, all of our research facilities.

Senator JOHNSON. And what percentage of them are idle?

Dean HAMMOND. That depends on what you mean by "idle." If you mean their potential usefulness, I would say that we could easily double or treble our research output for the war.

Mr. COLLINS. What are the bottlenecks that prevent that at the moment?

Dean HAMMOND. Manpower and funds, both.

Senator JOHNSON. And you have no facilities that are engaged in nonwar work?

Dean HAMMOND. We have none at present.

Senator JOHNSON. What problems have you encountered in retaining scientific and technical personnel for war work, other than you have already mentioned?

Dean HAMMOND. Well, it is the competition between agencies that is so undesirable. May I illustrate that?

Senator JOHNSON. Yes.

Digitized by Google

Dean HAMMOND. Just at present there is a severe need for sanitary engineering and sanitary engineering research with reference to housing and camp sites, and almost all of the sanitary engineers of the country have been swept into the Army.

The best man we had to conduct sanitary engineering instruction and research—he was a young man—went recently to a 75-percent increase in salary, way beyond what he ought to be getting. We were forced by his loss to stop completely in that field. We just closed the laboratory, locked the door, and put the key in our pocket. The man who did that to us was a former college man, and it is the former college man who is now in some Federal department that is the worst enemy we have, because he knows our jobs, he is familiar with our men. He has a job to do and he takes a man who is doing something very useful and puts him into doing something less than half as useful.

Our former staff man is now organizing short courses for camp sewage treatment plant operators, which is a thing that a subordinate could do, a man with half his capacity.

That illustrates the whole thing as to just what is happening all along the line.

Senator JOHNSON. Do you suppose that they have something more important in mind for him later on, and simply want to bring him into the organization to have him on tap?

Dean HAMMOND. No; so far as I know they just want him to do that thing.

Now I wouldn't want to be understood as being selfish about our good personnel. We have made some of our very able young men available to such divisions of the service as the Signal Corps, because they are eminently qualified to do a particular thing—sound detection work, for example, and ultra high-frequency work.

We had a chap who could do that better than anybody else, and the Signal Corps asked for him, and we said, "Certainly, he would be more valuable with you than he is with us."

But that is the exception rather than the rule. What I am describing has gone on all over the country, not just at Pennsylvania State, until our best research men are out of the colleges and somewhere in Federal employment.

Mr. COLLINS. Is it a fair statement of your feeling to say that you believe your group is in need of assistance?

Dean HAMMOND. I could say it still more broadly than that; that in general this bill offers the possibility of great assistance to the engineering college experimental units of the country, but that it ought to be scrutinized very carefully from the standpoint of unfavorable conditions of operation. In other words, if it is placed in the hands of somebody who hasn't the breadth of vision or the unselfish attitude to carry it out as it is intended to be carried out.

Mr. COLLINS. What type of a man do you think the administrator ought to be?

Dean HAMMOND. Well, I can answer that question in terms of a man that I know of, but O. P. R. D. has him.

In the hands of a petty bureaucrat, this bill embodies a lot of danger.

Digitized by Google

Senator JOHNSON. Vice President Garner used to say that a poor law with a good administrator is much better than a good law with a poor administrator.

Dean HAMMOND. That is right.

I am weighing my words when I say that this has dangers of a severe sort for the good of research in this country.

Mr. COLLINS. You also think that it contains potentialities for good?

Dean HAMMOND. It does, definitely.

Senator JOHNSON. Thank you very much, Dr. Hammond. It has been very kind of you to come here and give us the benefit of your views on this bill.

Dean HAMMOND. Thank you, Senator.

(Whereupon, at 5:15 p. m., the committee recessed, subject to the call of the chairman.)

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

FRIDAY, APRIL 9, 1943

UNITED STATES SENATE,
SUBCOMMITTEE ON SCIENTIFIC AND TECHNICAL MOBILIZATION
OF THE COMMITTEE ON MILITARY AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 10:30 a. m., in room 104–B, Senate Office Building, Senator Harley M. Kilgore (chairman) presiding.

Present: Senator Kilgore (chairman).

Also present: Henry H. Collins, Jr., and Herbert Schimmel, of the committee staff.

Senator KILGORE. The subcommittee will come to order.

The hearings on S. 702 will be resumed.

The first witness is Mr. Clyde Ellis, executive manager, National Rural Electric Cooperative Association.

Mr. Ellis, will you please come forward, hold up your hand, and be sworn as a witness?

(Mr. Ellis was duly sworn as a witness by Senator Kilgore.)

Senator KILGORE. Mr. Ellis, I believe you have a prepared statement. I would appreciate it if you would go right ahead with your testimony, pausing for comment at any place you may care to, and I may ask questions as you go along.

STATEMENT OF CLYDE ELLIS, EXECUTIVE MANAGER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

Mr. ELLIS. My interest in the matters covered by the science mobilization bill, S. 702, is not new. For several years I have discussed the inequities of our technological situation in speeches on the floor of the House of Representatives, when I was a Member of Congress, and in speeches elsewhere. I have over and over again expressed particular fear and apprehension with regard to our patent set-up. It is well known that through a vicious system of cartels and other monopolistic practices many technical devices have been denied to the people of America. In an effort to get to the core of this matter, I sought and was given a place on the Patents Committee of the House of Representatives.

My present position is executive manager of the National Rural Electrical Cooperative Association. This nonprofit organization brings together consumers of rural electric cooperatives, public power and public utility districts of the country. These projects operate in 45 States and serve well over a million farm homes. The purposes

Digitized by Google

of the association are set out in its articles of incorporation. I quote from this document [reading]:

The purposes of this association shall be—

1. To assist the utilization of rural electric cooperatives for the most effective prosecution of the war effort of the United States of America, and to assist such cooperatives with respect to their common problems in the post-war period; and

2. To engage in the compilation and dissemination of information with respect to rural electrification and the furnishing of other services to rural electric cooperatives and others in connection with the coordination, advancement, and development of rural electrification in the United States of America, its territories and possessions, for the primary and mutual benefit of the patrons of the association and their patrons as ultimate consumers.

Since the incorporation of the association on March 20, 1942, it has struggled for its existence against the power combine, the most powerful and most complete monopoly in America. Every attempt has been made to break the back of this association. Every kind of derogatory charge has been flung at us.

Senator KILGORE. Let me say something there, Mr. Ellis.

Recently I had the pleasure of talking with a man who was from South America, and the thing that had impressed him during an extensive trip over the United States was the widespread use of electricity and running water. That to him was the outstanding example of American progressiveness—the fact that the farmer had electric power on his farm and that most of the people had running water in their homes. He did not look at the air lines or the new scientific inventions; but those two things appealed to him tremendously, as his idea was that the progressiveness of a nation is gaged by the conveniences of the common citizens rather than by the few top developments.

Mr. ELLIS. That is right.

Senator KILGORE. The spreading of services to the common man was what impressed him.

Mr. ELLIS. Because the world over you will find that the farmer is in a peonage status.

Senator KILGORE. Mr. Ellis, don't you think that that is the basic difficulty in getting manpower on the American farm right now—the fact that the farm is looked upon as being backward and not doing a progressive job?

Mr. ELLIS. That is right. The rural electric cooperatives, which I represent here, in the past 8 years have furnished electricity to some 29 percent of the American farm homes. In the period until 7 years ago, private power companies had gotten electricity to only 10 percent of the farm homes in the country, and 60 percent are still unelectrified. Of course, we got started too late.

Senator KILGORE. Go ahead.

Mr. ELLIS. As I said, every kind of charge has been flung at us. Yet our association has grown by leaps and bounds because we are right. We are feared because we are constitutionally opposed to the undemocratic practices of those who control the electric power monopoly—because we believe in free competitive enterprise.

It is a well-known fact that all of the private power companies in this country operate as one company. They have a national association known as the Edison Electric Institute. A chart showing the corporate relations of these companies was compiled by the Federal

Digitized by Google

Power Commission in 1935. I have it here [exhibiting large chart], and this is the latest of such charts.

Now you can see at a glance that practically all of the power companies of any importance in this Nation head up, in one way or another, through the Electric Bond & Share Holding Co. Its arms reach out into these others, either through the Edison Electric Institute, or through the holding companies and the combines that go on within them. The Power Trust of this Nation operates as one huge monopoly.

Senator KILGORE. Isn't that the basis for the terrific fight that was put up to protect the holding companies?

Mr. ELLIS. Right, sir; and it is still going on, in many, many quarters, and here in Washington.

Of course, the Electric Bond & Share Co. is tied in with the House of Morgan, and Morgan interests and holdings are in many of the other companies.

Senator KILGORE. May we have a copy of that chart?

Mr. ELLIS. You may have this one, sir.

Senator KILGORE. Thank you.

(The chart was marked "Exhibit No. 7" and filed with the committee.)

Mr. ELLIS. I may add that the Securities and Exchange Commission has later data showing more and more of these connections, but this is all that was known in 1935.

Mr. COLLINS. In the intervening 7 years, has there been a concentration or a distribution of control?

Mr. ELLIS. There has been a concentration of control except for the operation of the Securities and Exchange Commission under the Utilities Holding Company Act.

Now, some of these connections have been very lately severed. However, it would not affect this chart to any great extent. The Securities and Exchange Commission has ordered the Public Service properties in Colorado to be sold, because they are not a part of an integrated system; they just operate there in a given area. Those properties would not show on here because of the connections with the Cities Service Co., which owns Public Service.

This chart also will reflect many other interesting details of how any one of the smaller companies might owe its allegiance to several of the large companies, so they are tied in at the bottom of the system as well as at the top.

It is also well known that these American companies have been interlocked with the German, Italian, and other power trusts through their officials and their holdings.

Senator KILGORE. Wait a minute. Do you mean to say, Mr. Ellis, that American companies are actually connected with German and Italian companies?

Mr. ELLIS. Yes, Senator, I say that officials of these companies are, many times, interested in, and are officers in, the foreign companies.

Senator KILGORE. You mean officials of American companies have interests in foreign companies which would cause an interlocking of foreign and American companies through their officers?

Mr. ELLIS. Oh, yes; that is an intricate system and much of that is going on today and has been going on many years.

Digitized by Google

Take the example of Mr. Calder.

Senator KILGORE. What is his first name, or initials?

Mr. ELLIS. Curtis Ernest, I believe.

Dr. SCHIMMEL. The present W. P. B. official?

Mr. ELLIS. He was until a few days ago.

Mr. Calder was made Director General of Operations of W. P. B. in January. Our association with more than 1,000 delegates from 40 States, was in session in St. Louis the day he was made Director General, and we passed a hot resolution out there, complaining to the President of the United States and Donald Nelson that this man, who holds many power connections in the United States, and some in Italy, and connections through other corporations in this country that have dealings in other countries, should be made Director General, and be over the authorities in W. P. B. that have to do, for instance, with materials for rural electrification.

We were complaining that Mr. Calder is a director—so lists himself in Who's Who in America—in the Italian Superpower Corporation.

Mr. COLLINS. And still is?

Mr. ELLIS. Still lists himself in the latest Who's Who, the 1942–43 edition.

Senator KILGORE. Do we have a copy of that here? I think that might be interesting to have in the record.

Mr. ELLIS. I think you will find that he is also president of the American & Foreign Power Co. Now that has a connection that is even more important than the directorship in the Italian Superpower Corporation, because that is the corporation——

[Document handed to Senator Kilgore.]

Senator KILGORE. Give that to Mr. Ellis and let him read it.

Mr. ELLIS. Shall I read it into the record?

Senator KILGORE. Yes; read it into the record.

Mr. ELLIS (reading):

Calder, Curtis Ernest, corporation officer. Born, Winfield, Kans., May 15, 1890. Son of Christopher and Sophia MacIntosh Calder. Education, high school. Married Bennie Marie Glanton, October 13, 1914. Children—Curtis Ernest, Jr., Gordon Samuel, Norman Bruce, Benjamin Glanton. Began as stenographer, 1906; construction cost analysis engineer, 1907; chief clerk, public-utility company, 1908–09, assistant secretary-treasurer, same, 1909–10, secretary-treasurer and purchasing agent, also assistant to general manager, 1910–12; Texas Power & Light Co., 1913–17, vice president, 1917–21; president, 1921–27; vice president, Dallas Railway Co., 1917–21; vice president, Texas Electric Service Co., 1917–21; president, 1921–27; vice president, Dallas Power & Light Co., 1917–21, president, 1921–27; now president, American & Foreign Power Co., Inc., Southwestern Sewer Co.; member, board of governors, New York State Exchange; director, National City Bank (New York), Selected Industries, Inc., U. S. and International Securities Corporation, Postal Telegraph, Inc., Italian Superpower Corporation, U. S. and Foreign Securities Corporation—

That American & Foreign Power Co. and the International Securities Corporation are, as I understand, the ones through which they handle these security negotiations for investment and control in foreign companies—

Commander, Order of Merit (Ecuador), Gran Oficial, Orden de Cristobal, Colon (Dominican Republic). Presbyterian. Mason (Knights Templar, 32 degree Shriner). Clubs: Union League, St. Nicholas, India House (New York); Bronxville Field, Siwanoy Country (Bronxville); Sleepy Hollow Country (Tarrytown); American Yacht (Rye, N. Y.). Home, 4 Hampshire Circle, Bronxville, N. Y. Office: 2 Rector Street, New York, N. Y.

Digitized by Google

That No. 2 Rector Street, New York, is the office of Electric Bond & Share Holding Co.

Senator KILGORE. Let's see what edition of Who's Who that is; is it the latest one?

Mr. ELLIS. It is volume 22, 1942–43.

Senator KILGORE. And from your knowledge of Who's Who, that is made up from his own statement?

Mr. ELLIS. Yes, Senator. As you know, they send you and me, when we are honored to be selected for Who's Who, a letter asking us to submit our biographical statement. They put them in print and then send them back to us for correction, so that must be a very correct statement.

There is further interlocking with the manufacturers of electrical equipment in this country and abroad, thus broadening the monopolistic practice considerably.

A good picture of the international power monopoly is outlined by Marquis Childs in his well-known book published by the Yale University Press in 1938 and titled "Sweden—The Middle Way". It is considered a reliable authority, and I want to quote, with your permission, from chapter 3 of this book. [Reading:]

The General Electric Co.—American capital—working through the International General Electric Co. founded a world-wide combine. First, there were a series of companies that General Electric held outright as subsidiaries. Then there were other companies in which the great G. E. had acquired an important, if not a dominant, interest. Then finally there were those companies to which the American firm had extended financial aid in time of stress. In one of its earliest reports to the Coperative Union, Hedberg wrote—

and he was a very great cooperative head of the Scandinavian country—

"By the beginning of the century control of the lamp industry in the United States was definitely concentrated in the General Electric Co. Manufacture proceeded partly in G. E. C. factories, partly in the factories of other firms dependent upon and operating under license from the G. E. C. Gradually a very extensive system of price agreements was thus built up, in strict secrecy; out of deference to the antitrust laws a semblance of free competition was maintained. Finally, however, the law was invoked against the G. E. C., but not until 1911."

Senator KILGORE. That was retained through the patent pools, was it not?

Mr. ELLIS. Partially through the patent pools and also they are able, either through the ownership of patents or——

Senator KILGORE. Or through litigation?

Mr. ELLIS. Yes, sir; or through litigation or through walling off the patents that might be held by somebody else, by concentrating to break a specific company, thus being able, in effect, to prolong their monopoly.

Senator KILGORE. Is there connection between the electric manufacturing industry and the electric service companies—the power companies?

Mr. ELLIS. Yes, sir.

Senator KILGORE. The reason I bring that up is that it was testified to here previously by Mr. Thurman Arnold with reference to the suppression of information on fluorescent lighting at the request of the power companies.

Mr. ELLIS. I will come to that in a minute.

Digitized by Google

In answer to your question, General Electric Co., for instance, was once the holding company, I am advised, of Electric Bond & Share. We think of it, as of them, as the super-super-super holding company, because it was three steps up from many of the operating companies. In my State, you have the Arkansas Power & Light Co., then Electric Power & Light Corporation, then Electric Bond & Share. Electric Bond & Share owns the common and voting stock of Arkansas Power & Light—90.2 percent, according to the Federal Power Commission. Then you had, over that, the General Electric Co., until the Securities and Exchange Commission recently put an end to that. I am afraid some of the old connections still exist.

We think there are some more very interesting connections.

But I will proceed with the quotation. [Reading:]

"As a result, all manufacturers' agreements for the regulation of markets and the control of prices were declared illegal and undertakings were demanded that they should not be repeated. Sales contracts fixing retail prices were also declared contrary to law. Thus, drastic changes were made necessary in the lamp industry. Companies working under G. E. C. license were dissolved and their manufacture then taken over by the G. E. C. Sales policy was altered so that the manufacturer sold direct to the ultimate consumer, wholesalers and retailers functioning as agents of the manufacturers, handling only on consignment."

You see, to avoid that thing, they just dissolved the companies and thereby got rid of the connection because it was then all the same company.

"Legal proceedings had thus served merely in the long run to consolidate the electric lamp industry still more thoroughly. Price agreements between factories violated the law, but not through the purchase of one factory by another. And though the manufacturer might not dictate the price an independent retailer should charge, he overcame that difficulty by making the retailer his agent, selling for him. The whole story is an excellent example of the difficulty of combating the trust effectively by means of legislation."

Hedberg's researches, which took him to many European countries, brought out clearly how the trust had extended its power, levying tribute from consumers around the world. Interlocking patent agreements made it virtually impossible for an outsider to encroach upon this enormously profitable domain. But Hedberg became more and more convinced that the Lamp Trust could not be ignored; that, hopeless as it might seem on the face of it, cooperation, and, if necessary, Swedish cooperation, would have to confront the reality of price dictation in this field. The price variations from country to country were utterly irrational, based, it seemed to Hedberg, upon the simple precept of charging whatever the traffic would bear. The price in 1928 for a 25-watt lamp was 37 cents in Sweden, 30 cents in Holland and Germany, 27 cents in Denmark, as low as 18 cents in Hungary, and 52 cents in England.

Dr. SCHIMMEL. Was that affected by the existence of such firms in Holland as Phillips and Ostrum?

Mr. ELLIS. I have read that is true, but am unable to verify it, and do not know.

Swedish cooperatives managed to purchase a factory, expand it, and to break the world electric-light bulb monopoly. Prices of ordinary bulbs tumbled from 50 cents to 15 cents right here in the United States, and the companies still made money.

As long as we have in this country a system of controlled patents and monopoly of industrial processes we cannot have free competitive enterprise.

We owe a debt of gratitude to the Swedish cooperatives for breaking this world-wide light combine. I, for one, would like to become fur-

Digitized by Google

ther indebted to them. The international monopolistic patent cartel combine makes for economic dictatorship. If there is anything to be feared almost as much as political dictatorship, it is economic dictatorship. They breed on each other. The German cartel combine was one of the principal vehicles by which Schicklgruber became Hitler. If we are going to have a high standard of living for the people of America, particularly the rural population, which is so often forgotten, we must have a strong Federal agency which is charged with the duty of looking for the better things and making them available to the people at reasonable cost. In other words, such a Federal agency must not stop at the point of breaking present patent pools and monopolies—assuming that is possible—but must go beyond this into the realm of active research and development in the interest of the American people.

I think that this bill provides for such an agency. The bill has been attacked by selfish interests whose extortions would be curtailed by its passage. It has been called totalitarian in principle. Charges of regimentation and all of the bugbears have been flung at it. In my opinion, if it has a weakness, its weakness is that it does not go far enough in attacking the monopolies which hamstring the development of this country.

My field—electric power—has been a fertile field for monopolistic combines. One thing after another has been kept from the American public because vested interests have served themselves at the expense of the people. Fluorescent lighting is an outstanding example of this. This superior lighting was kept off the market for many years and is even now being held back as much as the electric monopoly can hold it. And yet it has been established beyond doubt that fluorescent lighting is superior in candle power to incandescent lighting of equal wattage. It is infinitely cheaper to the consumer. But patent controls have enabled the electric trust to saddle the more profitable incandescent system on an ever-suffering public. Electric light bulbs and lamps manufactured under the control of the power trust are still designed to use more power rather than produce more light.

Senator KILGORE. Sometimes that hold-back creates profits for still others—inefficient lighting tears down eyesight, which also helps the spectacle monopoly.

Mr. ELLIS. Yes; and, incidentally, I am sure the Senator knows well, we have a very interesting case in connection with lens production that gets back to Germany, where certain American companies agreed to stay out of certain competition with the German glass cutters.

Senator KILGORE. In other words, poor light directly attacks the health of the American people.

Mr. ELLIS. Absolutely.

Senator KILGORE. Mr. Arnold testified that the power companies objected to even a demonstration and exposition on the effectiveness of fluorescent lighting showing it would cut down power consumption and increase light.

Mr. ELLIS. All these lamps [indicating ceiling fixtures in the committee room] are designed not to produce light but for beauty and to use more power. When you hang this type of lamp in the room, Senator, you cut off most of the light and permit a little to get out at the bottom. Here [indicating] in these glass containers that hold all the dirt they collect just a little light gets out at the top.

Digitized by Google

Senator KILGORE. As a matter of fact indirect lighting, which has been greatly boosted, is one of the greatest users of power that we have.

Mr. ELLIS That is right.

Another good specific example of how the electric monopoly works against the public interest is found in the story of the struggle by rural electric cooperatives to lower consumers' power costs by changing the type of meter in rural areas. A 2-year struggle began in 1936 when the chief engineer of the Michigan Public Utilities Commission attempted to change over from the old meter to a cyclometer. The older type meter is a complicated instrument and is almost impossible to read except by one having a technical knowledge of the subject. You know the type; some of the wheels run one way and some another. This engineer felt that power costs could be cut down considerably by eliminating the expense of monthly meter reading, which amounted to 11 to 15 cents per meter for each reading. He proposed the substitution of the cyclometer which can be read easily by anyone and which is not unlike a speedometer in appearance.

The idea was to have the farmers read their own meters and mail the reading to the cooperative regularly. A company reading every 6 months would check the farmer's accuracy. It was found that this could be done at a cost of 3 to 5 cents per meter reading, and it was proposed to pass the saving along to the consumer. The Public Utilities Commission called General Electric and Westinghouse together and asked that they make available such a meter. The answer was a flat, "No; it can't be done." The chief engineer then went to Canada, where the cyclometer was in use. He found that these cyclometers were made by General Electric and Westinghouse to meet competition from a Swiss meter manufacturer. When he went again to General Electric and Westinghouse they protested on different grounds. So the Sangamo Meter Co., of Springfield, Ill., was called on. They agreed to make the meters, provided that a minimum order of 25,000 was placed with them.

Ten R. E. A. cooperatives pooled together and ordered that number. When General Electric and Westinghouse learned of this they immediately produced a cyclometer and put it on the market in Michigan. R. E. A. quickly made its use Nation-wide at tremendous savings.

These great electric monopolies had maintained that the meters could not be produced for various technical reasons, although it developed that they were producing them for distribution in Canada all the while. Their real reason for refusing to make the cyclometer available to the American consumer was that they feared that if the consumer knew how much electricity he was using he might be able to control his consumption and keep it within the minimum. I might add that the reverse has proven true. The cyclometer is now in use in this country in almost all areas where cooperatives are operating, and costs have tumbled. The private utility companies continue to use the old-type meter.

Dr. SCHIMMEL. Do you believe that rural electrification has been held up by lack of adequate research along those lines?

Mr. ELLIS. Yes; indeed. It has been a terrific struggle to get the equipment to fit a particular or a peculiar need because of the monopoly, and in many lines of construction the power interests have said—and have convinced some of the smaller manufacturers—that

Digitized by Google

"it cannot be done," and consequently R. E. A. has had to go out, over a long period of years, and engineer low-cost lines that are now in existence all over the country.

Senator KILGORE. As a matter of actual fact, the cooperatives have had to go to their competitors to purchase equipment?

Mr. ELLIS. These cooperatives, Senator, have been on their knees begging for engineering, for equipment, and for power. I might also throw this in here: Because of combines which exist, the power companies have been able to place their men in high places in Government down through the years to help perpetuate and control the monopolies, not to mention the fact that the power companies usually control the State utilities commissions.

It developed when the Office of Production Management was set up that the first man to head the Power Division, the first director of the Power Division of O. P. M., was C. W. Kellogg, who was and is head of Edison Electric Institute, the national association of these big holding and operating companies. He was the first director of the Power Division of O. P. M. and brought in with him a great group of Electric Bond & Share people, chief of whom was J. E. Moore. According to the latest issue of Electric World, Mr. Moore is the man whom they call in, down at the Power Division of O. P. M., to help work out the matters.

Senator KILGORE. Now the W. P. B.

Mr. ELLIS. Yes; W. P. B. It is the same rose by a new name.

J. E. Moore, I am advised, is a dollar-a-year man and came from Electric Bond & Share. It also developed that Col. John C. Damon, who was in charge of power at the War Department, is the same Col. John C. Damon who was in the power set-up in World War No. 1 in the War Department. He was helping work out these deals to give all the power contracts to the private companies and never permitting the cooperatives to furnish any of the war projects if he could help it, even though most of the new war projects were placed out in the country in the natural territory of the cooperatives and not in the towns.

Recently, Colonel Damon was relieved down at the Power Division of War Department following a scandal which developed about the war contracts.

The point I am making is, because of their power, because of the combine, because of the cartels and all that goes with them, they are able to place their men in these high positions to get the job done.

Perhaps the power companies today are as near running this country in this war crisis—they took advantage of the crisis to come in—as any other group of people.

Dr. SCHIMMEL. To what extent were private companies willing or able to develop rural electrification in the United States?

Mr. ELLIS. I am glad you said "willing or able." We do not know whether they were unwilling or whether they were unable. I think they thought they were unable, and perhaps they were unable because of the terrific watering of their company stocks, because of the write-ups of many kinds which had no excuse for being, because of the practices which they—well, you can't bribe Missouri legislators with nothing, and you have seen recently where certain high officials of the Union Electric Co., of St. Louis, are no longer at large. That

Digitized by Google

thing has been going on all over the country, as we know from court records, almost since the beginning of the private power companies.

They did not go into the rural areas because in my opinion, one, there was not the great profit there; two, their costs, which they held up artificially, would not permit it at a price which the farmer could afford, and even today these cooperatives are having to buy their power from the power companies all over the country at the power companies' own prices. The cost of that power is based on all the high-cost figures which are included in the power companies, and these cooperatives in many, many instances are buying their power from the power company that operates in the town around which the co-op is located, at a wholesale price fixed by the power company; then, they take the power out into the country even though the private company has held the wholesale price away up, and sell it to the farmer in thinly settled areas at less than the power company does in the towns, indicating that the private companies must make terrific profits in the cities.

Dr. SCHIMMEL. And your experience there would indicate that the benefits could not be brought to the countryside without Federal action?

Mr. ELLIS. Right, the cooperatives, financed by Federal loans, have been the answer. The farmers have no way of pooling themselves together for the purpose of achieving scientific development, or to do the research necessary, except through the Department of Agriculture—and that is very limited and wholly inadequate for it does not deal generally with equipment—which is another argument for this bill.

Senator KILGORE. We used to have little rural cooperative telephone companies all over the country, and they have all gradually been taken over.

Mr. ELLIS. Why, Senator? In my opinion, because the big companies could do the research, could control the monopolies, control patents, and would not make those patents available at sufficiently low cost to permit our rural people to carry on.

Senator KILGORE. It was hard for them to get instruments, I know that.

Mr. ELLIS. And finally the modern instruments outgrew the old ones, and they simply could not continue.

In this country we have a living example of how Government control of technology and science has contributed to the general welfare. The United States Department of Agriculture is an outstanding example of this in certain fields. Through federally subsidized and directed research, agriculture has advanced by leaps and bounds. The agricultural experiment stations, an integral part of our aggrarian economy in every State, have carried forward this theory with highly successful results to the American farmer, particularly the little fellow who must depend upon State and Federal assistance if he is to keep abreast of the rapid development of civilization.

The T. V. A. is another good example of how Federal technological activity can help people, a good example of the purpose that can be served by this bill. This agency has made great progress in the development of cheaper appliances and lower power rates and, to a limited extent, has served the purpose of this bill. Its achievement

Digitized by Google

in the production of concentrated phosphate fertilizers is an example. It has met, of course, with bitter opposition from the power combine. The same interests who opposed and are opposing T. V. A. are the ones who are bittery fighting the rural electric cooperative movement, which I represent.

Senator KILGORE. Let me interrupt there, Mr. Ellis. Don't you think the work done by the Federal Mine Research is another outstanding illustration?

Mr. ELLIS. Right, Senator.

Senator KILGORE. I know, to start with, the operating companies fought them tooth and nail and would have nothing to do with the Federal Mine Research, or any Federal work at all.

Now they are relying absolutely on them for suggestions as to economic mine procedures, in lifesaving, in mining, and our Bureau of Mines has done more for them than any other branch that they have ever dealt with.

Mr. ELLIS. That is right; the Bureau of Mines looks at all of those angles and not only helps the consumer ultimately but works with the operators in establishing sources of mineral supplies and, in fact, takes every phase of that business and works them all together for the common good of the people.

Senator KILGORE. At present the small- and medium-sized manufacturers are utterly denied Federal assistance.

Mr. ELLIS. That is right.

Senator KILGORE. He has nobody to go to.

Mr. ELLIS. The big companies engaged in mass production of certain given articles are slow to break away from that particular commodity, even though a better one might be produced, if they control the patents, and yet they usually strive to control the new patents to keep other manufacturers from producing the improved articles.

In my judgment, a part of the fund appropriated pursuant to this act could well be applied for the benefit of our rural population in conjunction with our State institutions.

Such funds could be used beneficially for conducting research, investigations, experiments, including the purchase of necessary scientific apparatus relating to development of natural resources and power, applications of machinery and equipment to economical and efficient production, invention and development of useful products and processes, utilization of surpluses and trade and industrial wastes, improvement of living and working conditions, with special reference to housing, health, sanitation, and safety—planning, design, construction, management, and maintenance of engineering projects.

In addition, the funds could be used for printing and dissemination of the results of investigations, research, and experiments for the information and benefit of the people; development of research for improved methods in canning and processing meats; vegetables, fruits, and other foods; planning and design of equipment for development, with the use of electric power, of local industry, such as canneries, woolen and cotton mills, oil mills, fertilizers, refrigeration plants, processed foods, balanced stock and chicken feed, lumber fuel from grains, chemicals, and many other uses of the farmer's waste product.

I read in the newspapers that the science mobilization bill, S. 702, has been termed the "Magna Carta of Science." In my opinion, the

Digitized by Google

bill should also be termed the "Rural Liberation Act," for it has strong possibilities for bringing new benefits to the small farmers and rural folk of America. These people are the last to share in the new developments of civilization. And, by the way, these small farmers are in the majority, by far the majority.

Most of our farm people today are producing for a twentieth-century war with eighteenth-century equipment. A Federal agency which will develop the Nation's resources will help these often forgotten people to assume their proper place in the Nation's economy. Only by full and free utilization of American scientific and technological resources and facilities can the rural people hope to enjoy the richness of modern life. A monopolistic economy denies them this right. The proposed office of scientific and technological mobilization would accomplish the desired results.

Senator KILGORE. Mr. Ellis, would you explain for the benefit of the record the relationship between the Rural Electric Cooperative Association and the Rural Electrification Administration—just how they work together, and so forth?

Mr. ELLIS. Yes, Senator; I shall be happy to do that.

The rural electric cooperatives have simply borrowed money from the Rural Electrification Administration. There was no subsidy whatever; in fact, the interest they are paying amounts to a profit to the United States Government. The Rural Electrification Administration, however, has done an excellent job of administering, helping, and guiding these cooperatives.

All industrial and professional groups over the country, of any size, have a national organization. This National Rural Electric Cooperative Association was organized a little over a year ago, incorporated in the District of Columbia as the independent association of all of these cooperatives, power districts, and public-utility districts, and they pay into the association a membership fee plus 10 cents per connected consumer per year. The individual cooperatives have their own publications; they have their own annual meetings. Their people know and are conscious of the fact that they are paying—it amounts to less than 1 cent per month per consumer, but there are over a million of them—to maintain and operate the national association.

Senator KILGORE. The national association can assist in preventing individual cases of oppression against electric cooperatives?

Mr. ELLIS. Right; and those individual cases are pretty widespread, Senator.

Senator KILGORE. The attorney general of the State I come from used, up until 1941, the entire legal force of the State, coupled with that of the public service commission, to block every possible form of cooperative, even where power companies said they could not furnish the power. And because of that, we were unable, in my State, to take advantage of the possibilities of rural electrification.

Mr. ELLIS. And you can look sadly, Senator, at a map of the States showing the R. E. A. co-ops, and your State stands out like the Sahara Desert as one of the States that has practically no rural electrification. West Virginia has, I believe, only two cooperatives.

Senator KILGORE. I know. The attorney general of the State engaged the State's entire legal forces in a fight against two things:

The first was to prevent the Federal Government from erecting a

Digitized by Google

flood-control dam which might later be turned into a power dam; and the second, to prevent the formation of rural cooperatives in territory not served by any electric company.

Mr. ELLIS. Your State is coming into the program, and with your help; and one of the purposes of this association is to get out there, and get into the fight, because the Rural Electrification Administration, as a Government agency, just cannot do it.

Senator KILGORE. The people of one particular section that I knew well came to me. They had petitioned for 4 years—and had deposited money in escrow with one of our power companies—to put in a power system in this agricultural section. They had donated the right of way; they had given the poles; they had done everything but put up the wire, and they would have done that if they had had an opportunity, and they wanted to buy the power—all without result. Finally, on my advice, they started to form a cooperative, and immediately the power company came alive and started building that line right away.

I think, however, it probably cost them more, at the outset, than they would have had to invest in a cooperative company; but they felt that was because the State legal forces did not want a farm cooperative to be established; that is, under the attorney general—who is not now the attorney general.

Mr. ELLIS. I may say to you that I have had the pleasure of talking with several of your people, and they are very much interested in rural electrification cooperatives, and they are conscious of your friendship, Senator Kilgore, and I think that much can be done in West Virginia in the next few years.

Senator KILGORE. I think so, and it should be done.

Now, for the benefit of the record, I wish you would explain how a cooperative is formed.

Mr. ELLIS. May I use a specific example from my own country?

I live in northwest Arkansas. My father and mother live on a farm—I grew up on it—and they had been trying and trying to figure out some way of getting electricity into the home for endless years.

Senator KILGORE. Because electricity means ice, preservation of butter and eggs, and many other things besides just light on the farm?

Mr. ELLIS. It meant a new way of life.

There is as much difference between having electricity and not as there is between riding in an airplane and in a log wagon.

My parents, our neighbors, and neighbors in the several counties desired to have electricity but could not figure out a way. I as a young man tried with them to get the Southwestern Gas & Electric Co. to come into our area, to build lines into our community from Rogers, some 12 miles away, but the company would not do it. Finally they heard that the Rural Electrification Act had been passed.

I was, at that time, in the State legislature and introduced what became the first Rural Electrification Act in Arkansas, under which cooperatives were later organized.

These people got together and they wrote to Washington and asked for somebody from the Rural Electrification Administration to come down and tell them how the thing could be done. A representative came and they had several meetings, at which he said, "You have got to go out here and get the equivalent of three people to the mile, over a few hundred miles of line, to sign up and to pay in $5, which

Digitized by Google

is to be membership in the State corporation, a cooperative corporation." When they had done that and gotten organized, had been incorporated and had elected a board of directors, the Rural Electrification Administration then made a feasibility study of the area. When they found it feasible, they made an allotment out of the funds Congress appropriated to them and sent their own men there to help work it out. The cooperative then, upon R. E. A.'s advice, employed engineers who were capable of working up the system. The money was paid out to them as they needed it. They contracted, with the help and guidance of the Rural Electrification Administration, with contractors to build the line.

Now, when the lines had been built, the board, upon the advice and counsel of the Rural Electrification Administration, selected a manager to manage the cooperative. Then he selected his linemen and other employees. They had to work out a source of power and some power company—that is often very difficult—and having gotten this source of power, they had a big celebration "to energize the line," and then they had electricity.

That is briefly the story.

Senator KILGORE. Now, what about the operation? Once having gotten the lines energized, do you have any trouble with defaulting of payments to the Government on the part of cooperatives?

Mr. ELLIS. Senator, one of the most amazing examples of public financing is the R. E. A. co-ops. I dare say that perhaps not in all the loans of the R. F. C. have they such a record as we have made. As you know, the R. F. C. has loaned most of the money to the R. E. A. Certainly, the loans on the part of the R. F. C. to the railroads, and the loans to various other private enterprises in America, would not begin to compare with the record of the electric cooperatives. They are now paid ahead on all of their money—although they are required to pay the loans off in 25 years—they are paid ahead on those loans more than $10,000,000 to the Federal Government.

It is true that, because the war caught some just in the beginning of construction, these particular ones—I know one that has only 12 miles energized—could not get any more wire. They are in some difficulty financially, but it is not their fault and they will pull out after the war.

Senator KILGORE. The over-all picture is good?

Mr. ELLIS. The over-all picture is extremely good. The power companies said it would not work. They said:

"You cannot make electricity available to rural America; the people are scattered out too much."

But it is working.

Senator KILGORE. Was not a study made whereby lighter transformers, cheaper ones that worked just as well or better, were developed by the R. E. A.?

Mr. ELLIS. There is a big story on transformers. I do not know it all—I am not an engineer—but the Rural Electrification Administration, I understand, made as great progress on the transformer program as on the meters. The whole Nation is indebted to them for it because it is bringing to us cheaper transformers, and consequently cheaper electricity. The effect of the work of the R. E. A. and the cooperatives is today bringing down the price of electricity everywhere,

Digitized by Google

even in Washington, D. C., and that is why private power companies are fighting us desperately and that is why the newspapers who are influenced to a great extent by many of these big power company ads are fighting the rural electrification program.

Senator KILGORE. Are these rural electrification projects rendering any assistance in the war effort at the present time?

Mr. ELLIS. Senator, I am glad you asked that. They are of invaluable assistance in the war effort. In certain areas, they are now serving air beacons and airfields, many small projects all over the country, and some factories, and, of course, that is a direct benefit to the war effort. Then, of course, every electrified farm can produce substantially more food than if it were not electrified.

There are instances where the War Department, however, sent their men out and tore down the R. E. A. lines in an area—though the co-ops had transmission lines big enough to serve the project they were going to locate in that vicinity—and paid a power company to build in from some distance away to serve those projects.

Senator KILGORE. Do you have any specific instances of that kind which you could cite to the committee?

Mr. ELLIS. Yes, sir; at Neosho, Mo., which is north of my home in Arkansas, is Camp Crowder, where the local cooperative there had lines in the area, including a transmission line. The War Department came in while Colonel Damon was in charge of power and ordered those lines torn down. The cooperative there offered to furnish the electricity. The Empire District, the big company there, offered to furnish the power. Empire was given the contract. The R. E. A. lines went out. Empire built transmission lines and today is serving the camp at a substantially higher rate than that offered by the co-ops.

Another case of a slightly different type is at Camp Gruber, Okla. That camp is located out in the Cookson Hills country, in a wooded area, and no towns of any size are nearby. There was no power system serving the area. The power had to be brought in from the Grand River Dam a few miles away. It didn't make any difference who furnished the power to the camp; it had to come from the dam. The Public Works-R. E. A. set-up down there offered to furnish that power at 5.2 mills per kilowatt-hour. The Oklahoma Gas & Electric Co. made a bid—we did not know at that time what they bid—and the War Department let the contract to the Oklahoma Gas & Electric at a rate that figured 10.8 mills per kilowatt-hour. The difference between the two contracts amounted to about $124,000 a year.

Senator KILGORE. Did the War Department go ahead in both instances?

Mr. ELLIS. After some investigation and—if you will pardon my country slang—"a whole lot of hell-raising" in the House by the Oklahoma Members of Congress and myself, and by all the people down home who were protesting, too, the War Department canceled the contract with Oklahoma Gas & Electric, and gave it to Public Works.

Senator KILGORE. But the Missouri proposition went through?

Mr. ELLIS. Oh, yes, sir; and many, many others went right ahead. As I recall, all the others went ahead, and that is one of the reasons, as I understand it, behind the Coffee resolution, which is pending now in the House to investigate the war power contracts.

Digitized by Google

Senator KILGORE. Are there any efforts such as spite lines used to break up these cooperatives?

Mr. ELLIS. Senator, if we were to put on record the whole story of spite lines, the American people would not believe it, because they do not believe that those power companies are thieves and robbers.

In all sections of the country when you go to work up a cooperative you may have a meeting one night in an area where the people have been trying for years to get the power companies to build lines, and when you wake up the next morning there is a power line down the road, built at night by the power companies—spite lines. Those instances have happened all over the country. Of course, they cannot build a lot in 1 night, but they also build spite lines in the cream of an area, forcing the cooperative to build in the outlying edges or sections, and perhaps making the project not feasible. That has gone on and is still going on because the power companies know that the rural electrification cooperatives, by the examples they are setting, are ruining their high-cost, extravagant set-up.

Senator KILGORE. And in that case their intent is simply to skim the cream from the power market and not let the cream take care of any of the blue milk?

Mr. ELLIS. Right.

Senator KILGORE. To what extent is line construction now being carried on by cooperatives and power companies?

Mr. ELLIS. When the War Production Board issued its P–46 last July all construction was stopped and materials frozen. Construction remained completely stopped except in a few specific instances where wire had to be run into an area to serve a war plant, or something like that, until January. In January we held our first annual convention of the cooperatives in St. Louis, during which, incidentally, the President of the United States sent us a message, as did the Secretary of Agriculture. Three Senators were there—Senator Russell, Senator Aiken, and Senator Butler—and addressed the convention. Senator Norris spoke, Chairman Olds, of the Federal Power Commission, Mr. Pope, of the board of directors of the Tennessee Valley Authority, and a representative from Bonneville—it was an all-power meeting and the first one held in America. We passed some strong resolutions. We had been doing some work before on the War Production Board, asking them to permit the use of material that was frozen. There was enough frozen to electrify some 30,000 farms. We had conducted a survey to determine how much you could increase production with rural electrification. In the vital foods—this would not be true in the grains—the composite answer from the cooperatives was that you could increase the production of meat, milk, eggs, vital foods, by electrifying the unelectrified farms, by 23.7 percent.

We continued to work with the War Production Board, insisting that they permit the electrification of further farms, and they, through a series of orders, have permitted some additional construction. They are permitting the use of most of these materials that are idle. They still have not given us house- or farmstead-wiring orders to permit wiring of farmsteads as we think they should be. Some of the men in the Power Division of the War Production Board have done much in an effort to work out rural electrification for the Rural Electrification Administration. Some are sympathetic; others are not even friendly.

Digitized by Google

More wire is going to be made available, according to what they tell us.

Senator KILGORE. Was that freezing due to a copper shortage directly?

Mr. ELLIS. Ostensibly. I am afraid it may have been due, to some extent, to the fact that so many Electric Bond & Share fellows were and are in the Power Division of the War Production Board.

Mr. COLLINS. Were inventories taken of the copper in private and public hands at that time?

Mr. ELLIS. Yes, sir; I understand so.

Senator KILGORE. Has there been much experimentation carried on in an attempt to develop a transmission substitute for copper?

Mr. ELLIS. Yes, sir; considerable, but the facilities are limited. Great work has been done with aluminum, but that did not help much here because aluminum is as scarce as copper, or was when the war came on. Scientific studies have to be made, and are being made, in steel; and though steel does not conduct so far or so well and will not last so long, it can be used.

Senator KILGORE. Too much line resistance?

Mr. ELLIS. Right, but it is being used, and the War Production Board is making more and more steel available for line construction.

Senator KILGORE. During the emergency that is, to be replaced by copper later?

Mr. ELLIS. Ultimately to be replaced by copper, or some other substitute, such as aluminum.

Mr. COLLINS. Did the inventory disclose any hoarding in private hands?

Mr. ELLIS. Yes; but I cannot give you the figures; only the War Production Board has those figures.

Senator KILGORE. Do you know the number of farms in the country that are not electrified, and are there any plans that have been prepared looking toward the electrification of those farms?

Mr. ELLIS. I am not your best witness in reply to that question, because the Rural Electrification Administration has recently conducted an unelectrified farm survey. Charlie Falkenwald, who was chief of the Applications and Loans Division, and made that survey, died a few days ago. Mr. Gerth, who is Acting Chief of Applications and Loan Division now, could give you that information as, of course, could the R. E. A. administrator, Mr. Slattery. However, I understand that they determined that of the some 6,000,000 rural establishments there are about 4,000,000 that are not as yet unelectrified. They discovered there were many more than they first thought.

Senator KILGORE. Do you have anything further to say on what the setting up of an over-all research or technical agency by the Government would mean to the dirt farmer?

Mr. ELLIS. My work is with the dirt farmers.

Senator KILGORE. Yes; I am not talking about the big bank or insurance company owned farms or plantations, but I mean the American farmer, as we picture him, the man operating his own farm.

Mr. ELLIS. In every way that the mind can conceive of, the American farmer, the dirt farmer, would be helped by this bill. Everything which he grows, he ought to be able to process in the community where he grows it before it goes to market. Out of the processing usually

Digitized by Google

comes the profit, processing and merchandising, not in the production of the raw material. Technological advancement would help him tremendously.

You have instances now of what farm food dehydrators can do, about how they are being put in, and about electrical brooders being put in to help in the raising of chickens and the raising of pigs, and greater production stems from it. Everything the farmer grows could be processed to some extent, or could be better produced with technological advancement. Even in the matter of transportation, the farmer could be helped. In many areas he does not have adequate transportation, and he has not been given the benefit of all the modern advancements in transportation for his marketing. If he had the means by which he could better communicate with his fellow man, he would have a distinct advantage. Great marketing possibilities exist. Some of these days we are going to have a telephone system—I am not at liberty to discuss it, although I know about it—a telephone system that will amaze the human mind. The thing has been held back because certain interests do not want to put it on the market, and the farmers are the worst sufferers because they do not have available to them the telephones of city people.

Senator KILGORE. I was very much interested in reading recently of the freezing and cold storage lockers that are rented in some towns to farmers to store fresh meat and other products for the winter. It seems to me that there is no reason why those lockers should be in one building. I believe it would be just as possible to have a locker right in the farm house, just as possible as it is to have a refrigerator there.

Mr. ELLIS. The cooperatives have led the building of rural refrigeration lockers. T. V. A. really pioneered it, and there again you have the example of a Government agency breaking the log jam to get a much needed piece of equipment into the rural areas. If it had not been for the T. V. A. and the R. E. A. and in turn the local cooperatives, such a thing might not be in existence. They help the farmer on the health angle because farmers with electricity can now have fresh meat all the year, and on the farm where I grew up it was a very, very rare thing ever to taste fresh meat from one cold season to the next, except chicken on occasional Sundays.

Senator KILGORE. You will note that in this bill the funds provided are what you might call discretionary funds for the Director, so he need not confine them to his own office, but could subsidize and experiment, for instance, in agriculture or in mining through another agency that would, in the opinion of the Board, tend to foster the best interests of the country.

Mr. ELLIS. That is very good, Senator. Many States have their own State institutions; for instance, in some States where they have a mining potentiality, they have emphasized a school of mines——

Senator KILGORE. As in my State.

Mr. ELLIS. And this authority, the agency which encourages and cooperates and works with them, will supplement and assist them in their efforts.

Senator KILGORE. I have also found that frequently research along one line will develop a nuisance byproduct which might be of tremendous value to some other phase of our economy.

Mr. ELLIS. That often happens.

Digitized by Google

Senator KILGORE. But, unfortunately, in private research, if it does not fit into the immediate project, it is often allowed to languish without complete development taking place.

Mr. ELLIS. Yes, sir; that seems to be going on all the time, and there is now no practical way of bringing that into the open. There is another thought that I might bring in, too.

Germany was ahead of us in much of her scientific development along certain lines because she had entered into these cartel combines with other industrial countries, the chief of which was the United States, not to invade those fields, and Germany having the kind of system that it has, always was able to forge ahead in those particular developments whereas in our so-called free-enterprise country nobody was working with the interest of the whole public at heart, and our people suffered. Now, Germany, as we all know, has never had free competitive enterprise in all her history. I think I ought always to use the word "competitive" because the monopolies claim they have free enterprise and I am afraid that they do—too free.

Now, under the German system, the government has worked with the industries to help them get a strangle hold on the rest of the world. The peoples of all nations have suffered to aid the German monopolies. Remember the recent Standard Oil scandal.

Senator KILGORE. The American practice comes close to the case of liberty becoming license.

Mr. ELLIS. That is right.

Under the German system of no free competitive enterprise, especially when the Government itself would sponsor certain types of development, they have been able through the years to forage 'way ahead. For instance, they were subsidizing the airplane industry and the development of certain parts for airplanes when we in this country were just doing nothing about it. It is true that in this country, railroads, and bus lines and other forms of transportation were opposed to it. I served on the Post Office and Post Roads Committee of the House when these other interests were opposing airplane and airplane development, while in Germany air transportation was going on at a tremendous pace.

Now, if we are going to have free competitive enterprise, if we are really going to have a free democracy, then at the same time we must not permit the great industrial corporations to involve us industrially in almost the same manner as the German dictatorship.

Senator KILGORE. If there is anything else you would like to have in the record, we will be glad to have it.

Mr. ELLIS. I think this bill will go a long way toward lifting agriculture out of the peonage conditions that exist, and setting it over into a modern world. The agricultural people are depressed, disheartened, leaving the farms and not going back, because of the abnormal situation that has existed over the past years. Many of the more aggressive left the farms and went to the cities and hope never to go back. We have been destroying agriculture as a way of life in America, because of these conditions.

Senator KILGORE. Every farm electrified means a customer for electric refrigerators, for electric light and, if reasonable priced, for a food locker, or for any number of other pieces of farm electrified equipment, and it creates more markets within the United States for the manufacturers.

Digitized by Google

Mr. ELLIS. Yes, sir. I believe we are going to save the equipment manufacturers in spite of themselves.

Senator KILGORE. Now, however, if that manufacture is concentrated in a few centers, it will stultify itself, by reducing the consumer market so the farmer cannot buy the equipment.

Mr. ELLIS. You have mentioned one of the most important things that R. E. A. has seen.

Senator Norris said, at our St. Louis convention, and these are almost his exact words: "It would not surprise me if many of the great inventions of the future come from the farm boy who used electricity to make new discoveries."

Our people on these farms are now, from the Atlantic to the Pacific, and have been, inventing all kinds of gadgets. What do you think they can do with them? They come here and try to get patents. Your people write you, I know, to help them get patents and the average American today cannot get a patent on anything. He does not have the money to finance a patent lawyer's research, he is certainly not helped by the Federal Government, and it would appear to him that the Federal Government actually endeavors to prevent him from getting a patent. If he gets a patent, and very few of the cooperative people have gotten them, always before he is able to know what he really has, there are those ready to prey upon his discovery or invention. If he develops something that might be completely revolutionary to some phase of agriculture, he does not know what he has, does not have the money to start a development of it, and along comes one of the manufacturer's agents and says: "I will give you $100 for it," and it [snapping his fingers] is gone.

Senator KILGORE. And thus starts the patent pool.

Mr. ELLIS. Thus continues the patent pool, sir.

Senator KILGORE. Now, we have some evidence that has been introduced, for instance, in the Truman committee in the hearing on rubber, with reference to that racket. We have a letter from an outstanding patent lawyer to his client asking him if he did not think it was going to be dangerous to carry on very many more infringement suits along a certain line, that he thought they were wearing the patience of the American public too thin, that while the infringement suits were accomplishing the purpose of eliminating competition, he feared that some time the American public would get tired of such things.

Mr. ELLIS. Without being derogatory or casting reflections on perhaps the greatest inventor, it has been said many times that Thomas Edison's success was due as much to the fact that he was a great patent specialist as to the fact that he was a great inventor. Senator, so far as the future is concerned, I am as much afraid of the danger that exists from the cartels as I am from the danger that exists from nazism, fascism, or communism. These cartels are more dangerous than dive bombers. They breed dive bombers.

Senator KILGORE. A company like Farben is able to make cartels which amount to treaties.

Mr. ELLIS. And are more binding.

Senator KILGORE. Their business diplomats are far-sighted people.

Mr. ELLIS. Their agreements are far reaching. Changes of administration don't disrupt them.

Senator KILGORE. Is it not because dollars and not lives are at stake?

Mr. ELLIS. Yes, sir; I am afraid that the very interests which have

Digitized by Google

preached isolationism in this country have made isolation an impossibility by their practices abroad.

Senator KILGORE. Thank you, Mr. Ellis.

Mr. ELLIS. Thank you, gentlemen.

Senator KILGORE. The next witness is Mr. Slattery.

(The witness was duly sworn by Senator Kilgore.)

TESTIMONY OF HARRY SLATTERY, ADMINISTRATOR, RURAL ELECTRIFICATION ADMINISTRATION

Senator KILGORE. For the benefit of the record, will you state your name and official connections?

Mr. SLATTERY. Harry Slattery, Administrator, Rural Electrification Administration.

Senator KILGORE. Mr. Slattery, we are considering S. 702, and we should like to hear anything you have to say on it because, although it does not seem sometimes to be appreciated, the purpose of the hearings on the bill is to improve it, if possible, and also to inform the public of its exact purposes and possible effect.

Mr. SLATTERY. Senator, I would like to start off by stating briefly my background, which would indicate that I have some knowledge, I think, of the subject before you in this bill.

Senator KILGORE. I wish you would do that.

Mr. SLATTERY. I have been more or less in and out of Government service for 37 years. First, I go back to the days of Theodore Roosevelt's administration; I first worked with the Inland Waterways Commission. I worked with the Conservation Commission, which was an important commission that first began the study of the whole question of conservation. The Commission later made many studies and many reports on the question of development of the resources of the Nation.

I was with that Commission and afterward, under the Tawney amendment, it was abolished, but later was carried on as a semi-private organization.

I have been with many of the Government activities that had a bearing on the resources of the country. I knew of the early fight, going back to the so-called Ballinger days. I was associated with the Ballinger committee and, of course, I naturally began at that time to know about the whole scope and ramifications of the great natural resources of the country. I was connected with the Forest Service which, in its early days, began the creation of the national forests, now, of course, under the care of the Forest Service. I served for many years under Gifford Pinchot, the father of the conservation movement.

I knew a great deal about the early effort to secure legislation to protect these great resources, the forest resources, mineral resources, water and oil resources, and, of course, it naturally impinged on the question of the scientific end, the development of our great resources. The Bureau of Mines, which was created back in those days, was a tremendous step forward. I had some knowledge of that, and of the first set-up of the Bureau. I went in the Department of the Interior in the pre-war days, under Secretary Franklin K. Lane as a

Digitized by Google

special assistant, and afterward went back to the conservation organization.

I knew, of course, the early projects on water power and probably that is one of the reasons why I had a background to occupy the position I have now. I know about the early creation of Boulder Dam. I was sent, by Secretary Lane, out in the West and I was assigned to a project called land for returning soldiers. Dr. Elwood Mead was the man at the head of the study, and we made a study in Canada about the possibilities of the use of these resources for the returning soldiers.

That had a relation to Boulder Dam, and on this Boulder project, likewise, I had a relation to the Department in many phases of its conservation activities. I was appointed in early 1933 as a personal assistant to Secretary Ickes, also as an assistant when Mr. Ickes was Administrator of the Public Works Administration. I was made Under Secretary of the Interior in 1938, and served until the President appointed me in 1939 as Administrator of the Rural Electrification Administration, succeeding Mr. John Carmody. Mr. Morris L. Cooke was the first Administrator.

I have given that background so you can see that I have been familiar with the relation of these great resources and the Government, and I know in general terms of the great possibility of scientific effort in many departments of the Government.

Senator KILGORE. Mr. Slattery, I have had some interesting experiences with reference to scientific governmental agencies and the influence they have with the people; and one thing is clear, that the operating companies have always been against Government scientific development. Even the agricultural research was fought vigorously at first.

In a hearing in which I participated there was a finding by a board, supposedly nonpartisan, which was being bitterly contested. I said to an outsider, "What is the matter, this is a subject that the Bureau of Standards could pass on," and the answer was, "If the Bureau of Standards ever passed on it, we would have no objection, because we believe the Bureau of Standards fully."

They knew that they would get the truth from the Bureau of Standards. That attitude is general in regard to the old-established agencies.

Mr. SLATTERY. I would like to put in a word on scientific effort by the Government, whether in agriculture, by the Bureau of Standards, or in any of the so-called old-line Government organizations. I think the men in scientific and research work have made a great contribution and have often devoted their lives in the service. It is very easy for people to talk about bureaucracy and all that, but they overlook great contributions by our old-established agencies in scientific research and inventions and studies, great aids which have been given to the economy of the Nation.

Senator KILGORE. It is an interesting thing that the public generally accepts the work of the established agencies and accords them the confidence that they deserve.

Mr. SLATTERY. I now come to rural electrification and, as Administrator of the Rural Electrification Administration, I think I can speak with a certain amount of knowledge.

Digitized by Google

In addition to my other Government background, I went abroad and saw some of the projects being established in the field of cooperatives in other countries, and I know of many scientific efforts that they have made. It may please you to hear about some of them. I testified before the O'Mahoney committee about a year ago and put into the record some data which might also be helpful here, which indicate very definitely how, for instance, Hitler, who knew what he was going to do, early launched an effort fully to electrify Germany, and Germany today is probably electrified 90 percent. Hitler knew he was going to take men off the farms, so he had a plan whereby, in 1935, he put through his own order—I think it was for 500,000,000 marks—which was to be disposed of for various electrical gadgets to help in the war. I have the details of that information. I have talked to a great many people back from Germany, I have gone through a lot of consul reports and various other books bearing on the subject, and they have no doubt highly electrified Germany. Hitler went to the extreme in using electricity, you might say. Mr. Leland Olds testified before one committee that Hitler used a great many of small water-power sites. When he would go into a country, one of the first things he would do was to begin to convert power sites and steam plants to his own benefit; and he highly electrified the small industries.

I bring that up because I was on the National Council of Defense when it was first appointed by the President and we had information then about those small industries, and we made a study and put it in the record. Mr. M. M. Samuels, Chief of the Technical Standards Division in R. E. A., made an investigation indicating that there were about 5,000 small industries in our country that had gone on the R. E. A. lines up to the time the study was made.

I heard Mr. Ellis' testimony about the unelectrified farm survey being made in R. E. A. The entire findings will be made public when the survey is completed and the possibility for future development for rural electrification is known.

As you know, of course, the War Production Board about a year ago prevented further construction of R. E. A. lines. Since that time there has been a modification of the Board's order, but there is no question about it but this country has only partly been electrified and I think in the electrification of small industries there is a great future. I know there is great possibility in the electrification of rural communities.

That brings up the whole question of labor-saving devices, which I think are practically in their infancy now. There are many possibilities for all kinds of devices that will help the farmer. We know that such devices as pig brooders and chicken brooders come into the war picture now and the fight for the increased production of meat. There are other things like refrigerators and dehydrators, all of which are of tremendous importance.

In that connection, I want to say that last year I went about 24,000 miles in a visit to many of our cooperatives. I think I saw most of the American picture, and I can say that one thing R. E. A. has made in the way of a contribution to the war picture is the manpower savings by electric aids. In addition, of course, there is no doubt but that the preservation of food by electricity under the increased need for food is making great progress.

Digitized by Google

A few years ago no one knew anything about dehydration and did not know much about pig or chicken brooders of the electric type. Of course, many farmers had the old-fashioned type, and a lot of them are still being used, but the new electrical aids were practically unknown.

They have certainly added tremendously to increased food production and have been a great factor in bringing up the efficiency of American agriculture

There is a small unit in R. E. A. which was begun under Mr. Morris L. Cooke, the first Administrator, which you might say is a technical division to make scientific investigations. They have worked with other groups here like the Bureau of Standards, and they have worked in many cases with private companies. There is no doubt about it, the private corporations have great laboratories, highly skilled engineers, and experimental plants to work with. Those plants and laboratories have brought a great many aids to the farmer along the lines of modern agriculture.

I spoke recently in New York on the General Electric radio station at Schenectady. I previously had some correspondence with the then president of the General Electric, Mr. Wilson, who is now here in the War Production Board. I said to Mr. Wilson that they did not give information about the great work that the Rural Electrification Administration was doing, did not give it to the public. Finally word came back to me that "we will give you a spot to explain R. E. A., we will put you on our radio." I went to Schenectady and spoke on the General Electric station. While I was there, their officials took me through the General Electric laboratories. I could see that they were doing research work for the future and I was privileged to look into some of their greatest works and know how they are laboring for the future.

I do not know whether you know of it, but during the Hoover administration he had what he called a bill for a Pure Science Research Bureau. I think it had an appropriation of something in the neighborhood—which looked very large in those days—of $500,000,000. I think the National Academy of Sciences people were partly back of it, and Mr. Hoover many times urged that there should be a far-flung research bureau by the Government that would carry forward the great possibility for public research, not to help the great corporations privately, but in the public interest. I have thought that there was a matter of great possibilities, and if I read your bill rightly that it is somewhat the idea back of it. I know that in the future of rural electrification there are all kinds of possibilities. We try to do the best we can but we have only a handful of men and we have only a very small appropriation. We have three or four young engineers who have made great contributions to the carrier system which we perfected on the R. E. A. lines. Those young men are now in England. With the advance of electronics and other developments of communications, they are making a fine contribution to the war. The R. E. A. has constructed a network of lines, around 400,000 miles, which is quite a sizable network. We streamlined rural electrification. I am not clashing with the private companies on it, but I do not think that they did much rural electrification in the early days. One thing the R. E. A. did with this streamlining, it brought the cost of construction down. The construction of electric rural lines used to be about $1,500.

Digitized by Google

R. E. A. brought the cost down to around $750. That made possible the aid of rural electrification to parts of the country that probably never could have otherwise received it.

Senator KILGORE. Mr. Slattery, in that connection a merchandising executive of wide experience recently said to me that one of the most dangerous results of the present war would be a monopoly on the inventions on electronics, by a Government agency, in private hands.

Mr. SLATTERY. I have seen the great advance of electronics. I saw the General Electric's laboratory and know of the Weshinghouse activities. I have read enough about it to imagine that many wonderful things will come out of it. I think back to the time when with Congressman Rainey, of Illinois, in 1914, I helped to draft the bill which was to create a Bureau of Agricultural Power in the Department of Agriculture. I remember in 1912 Congressman Rainey put in the record for me a speech that I called Power and the Future. I had come back from a trip to Ontario, seeing the advances there, and had come back by Schenectady and saw and talked with Mr. Steinmetz who was a member of our conservation committee. Under his imagination of the great future of the then high-tension systems, and the other advances of electricity which we had not reached, I used in that speech some of his ideas upon the future promises of electricity. In that speech, I dwelt on the great future possibilities of electricity and its domestic labor-saving possibilities. Many of the things that I covered, which were then almost figments of the imagination, have come into being today.

Senator KILGORE. Those things are disproportionately high priced, though, even today.

Mr. SLATTERY. I think they are; yes sir; but I think the great possible future of these aids in more production will make them in the reach of everyone. I know that we all can go back to the early days on the farm, with no pump, no aids of any kind, with kerosene lamps. Then look today at the modern electrified farm and realize that a lot of these gadgets cannot be brought to the farm people because they do not fit into their budgets. Certainly the prices have been coming down, but not as much as they should, in my opinion.

It seems to me that electricity on the farm is one of the great things that we need. I think of Mr. Edison and a statement that he made one time when he spoke to a naval consulting committee in the First World War on the subject of electricity. He said that he thought it was a blessing from the throne of God, what it had done for modern life.

Senator KILGORE. Mr. Slattery, I sometimes think that we exist as a nation because of an overdose of royalty in the Government in the mother country; and I believe we are suffering now, and have been for some time, from an overdose of royalty in business.

Mr. SLATTERY. I do not know whether you have read a speech Mr. Leland Olds made at the T. V. A. meeting only the other day. I think it was an unusual speech, because he put forward the idea there that there was such a thing as a danger of bureaucracy in business.

In the early days of electricity in this country many of the great patents and inventions in the electrical industry were developed by some individual genius. Then some of these men made efforts to give these patents to the public, knowing the great blessings they were. But later the things got into the hands of the great electrical industries.

Digitized by Google

Senator KILGORE. I was informed recently that Mr. Higgins, of New Orleans, has endeavored and finally succeeded in giving to the Government a patent on a torpedo tube which is supposed to be a very fine one, and one of the big factors in the gift was that he limited the profits on manufacturing by any manufacturer to a definite percentage, doing away with all royalties; and that did not seem to meet with great favor on the part of the manufacturers, but in fact met with terrific sales resistance.

Mr. SLATTERY. You know about the Babcock separator. I used to know Dr. Babcock; he was one of the typical Government scientists. He gave his separator to the Government, and what it has meant to the farmers of the United States hardly anyone could estimate.

My work with conservation often brought me into contact with cases where great inventions, processes, and other aids to conserving resources like oil and coal, and so forth, were discovered by individuals in the Government, and then finally showed up in the hands of private, profit-taking organizations.

We have had a good many inventions made by the personnel of the Rural Electrification Administration with reference to rural electrification. They have all given their patents to the Government, and we have had to have a lot of correspondence with the Department of Justice about the matter. I want to tell you frankly that it is not an easy thing for these men to give their inventions to the Government.

Senator KILGORE. No; it is not. It is the hardest thing in the world to protect the rights of the people. That is largely brought about by the decentralization in planning so that an appropriation to agriculture can be used only for that purpose, and if they develop some valuable side line that does not affect agriculture, they cannot go ahead with it. There is no centralized agency that they can appeal to, to turn over an idea to, or get funds to go ahead with the development. They can proceed with it only if it is for the benefit of agriculture. That type of decentralization is against the public interest and places those things into the hands of the patent pool.

Another thing, there is no central agency to defend the Government's patents, to decide whether they are being infringed on, or to handle the licensing of the actual manufacturing.

Mr. SLATTERY. I heard a speech at the annual meeting of the T. V. A. recently which was most unusual. One of the speakers told of some of the possibilities in the new day of electricity. He said that we will probably have houses without windows that will be warmed in the winter and cooled in the summer from one electrical device, and the speaker referred to a gadget in the houses that will produce purified air so that no one will have any trouble with hay fever or with insects.

This new electrical home will have provisions for food storage, food preservation, and cooking by electricity. All in all, it is a very unusual story, and, of course, I think you can assume that all of those wonderful things of electricity will be made applicable to everyday life. I hear every once in a while of some new invention made on the war front. Then I can see that these same inventions can be applied to domestic life in bringing about a change in the domestic economy that will bring a new day.

Senator KILGOFRE. Westinghouse, I believe, has an air purifier that, if it were to come into general use, would practically eliminate suffer-

Digitized by Google

ing from asthma. At this time it has not yet been placed on the open market, although I saw it in operation in about 1935. It was a small outfit—I do not think it could be so tremendously expensive to build—and you just set it in a room, and it takes all impurities out and leaves only pure air.

Then, also, there is the use of the ultraviolet rays for purifying. I know today many of the cafes use ultraviolet rays on drinking glasses. They bring glasses out from under that treatment absolutely germ free.

Mr. SLATTERY. I was going to say I would like to present portions of two talks, one by Mr. M. M. Samuels, Chief, Technical Standards Division of R. E. A., and part of a talk I made to the St. Louis section of the American Society of Civil Engineers.

Senator KILGORE. We would be glad to have them, sir.

Mr. SLATTERY. I think the R. E. A. engineers and technicians are making a great contribution along the line of study and investigations as outlined in Mr. Samuels' paper.

Senator KILGORE. We will be glad to receive it.

(The material referred to was marked "Exhibit No. 8" and "Exhibit No. 9" and follows:)

EXHIBIT No. 8

RURAL ELECTRIFICATION ENGINEERING AND ELECTROAGRICULTURAL ENGINEERING

[Excerpts from a paper presented by M. M. Samuels under the auspices of the Committee of Domestic and Commercial Application before the American Institute of Electrical Engineers, national technical meeting, New York City, January 1943]

We now come to electroagricultural engineering. When the statement was made that there was no electroagriculture, it was not meant that no one ever used electricity on the farm. And when it was said that there was no electroagricultural engineering, it did not mean that no engineer ever tried to apply engineering to the use of electricity for farming. Again, it was meant that as yet there is no specific branch of engineering that could be called electroagricultural engineering and there was no specific industry that could be called electroagricultural industry. As a matter of fact, these things are so new that it is difficult to say now what the subject of the first chapter of electroagricultural engineering should be. Even this will have to be developed as we go along. No more will, therefore, be said here about the engineering possibilities, and the discussion will limit itself to the industrial possibilities. Here we know of some definite needs, and this is addressed primarily to progressive American manufacturers who look ahead, find out what will be required, and proceed to build it and put it on the market.

Electroagricultural engineering is closely associated with rural electrification engineering, because, for example, the grounding problem is probably more important in connection with the fire hazard on the farm than in the city. A faulty ground may cause a fire; and when a fire starts on the farm, the results are frequently disastrous. A simple, cheap ground meter, suitable for the convenient use of every electrician, should be developed. Incidentally, the study of lightning protection of farm buildings and perhaps the development of more competent equipment for this purpose likewise invites some activity on the part of the electrical manufacturers.

While we are on the subject of hazards, we may as well consider the electric fence, which is important in wartime because less critical material may be used. The diversity of the types of control on the market is so great as to be bewildering, and many of the types are definitely hazardous. A committee of the National Electrical Safety Code has been engaged in the study of this subject, but before quantity production is possible some work by an American Institute of Electrical Engineers' committee and a National Electrical Manufacturers' Association committee will no doubt be in order.

When large-scale rural electrification started, all efforts were concentrated on bringing into the farm the minimum amount of civilized comfort, such as electric

Digitized by Google

lights, radio, a flatiron, a water pump, a washing machine, perhaps a hot-water heater, and here and there an electric range. This was as it should have been. The activity should continue, and improvements should be introduced. Illuminating engineers should study the problem of lighting for the farm, the farm home, the farmyard, the barn, etc., and the specific requirements of the circuit. This should possibly be made a project by the I. E. S. Lighting problems on the farm are different and call for different treatment.

An important item of comfort that manufacturers should devote their attention to is the development of a small, cheap but very reliable water pump to make it possible to bring running water into the poorest farm home. I consider this to be as important as the electric light. Public health authorities are unanimous in their opinion that running water in every home would reduce sickness in the countryside.

Recently there has come about a realization that every effort should be made to develop equipment to make it possible for the farmer who has electricity to use that electricity for real farming, to get more revenue out of his farm, to produce more or better food, to preserve food, and to make it unnecessary to let good food go to waste. This is real electroagricultural engineering. As was brought out in the paper referred to above, some wonderful work has been done along this line by men of science in the colleges and other laboratories, but it has not been possible as yet to make the result of their labor available to all the farmers in the country, because there is as yet no specific industry to manufacture the items as quantity production. There is already some evidence of the beginning of such an industry. What has already been done only helps to demonstrate what we may expect in the future when a real electroagricultural industry is established using quantity production methods for making low-cost but reliable equipment that the small farmer can use to get a little more revenue out of the electricity that he already has or will have. Most of the items already on the market are too expensive for the small farmer. They are intended for the more prosperous farmer, and our main interest should be to make the small farmer more prosperous.

At various times individuals have endeavored to list the electric equipment and appliances suitable for both the farm and the farm home. Some of these lists exceed the 350 mark. State agricultural colleges, the United States Department of Agriculture, and others have been responsible in large measure and worked exceedingly hard for many years on the research and development of electric applications. It must be said that very few of these have found their way to the farm in large numbers. It is most difficult to get one's teeth into the real meat of these applications, for, although much work has been done, yet little specific information, either on statistics or accomplishments, has been assembled. At first thought this seems strange, because so many of these can be cataloged as income-producing equipment which has been proven profitable to the owner.

Nineteen forty-one has been an exceptional year in manufacturing and the sale of all farm equipment, electric and nonelectric. It exceeded in volume any previous year, and the sales value of it was 36 percent greater than 1940 and 34 percent above the high mark set in 1937. Electric farm equipment sold for both the years 1941 and 1940, and the increase in favor of 1940, are shown in the accompanying table.

Electric farm equipment sold [1]

	1941	1940	Increase	
			Number	Percent
Milking machines	53,463	33,930	19,533	57.6
Cream separators (hand or power operated)	138,785	105,254	33,531	31.8
Milk coolers	13,143	9,134	4,009	43.8
Domestic pumps and water systems	360,412	267,972	92,440	34.5
Brooders	111,689	91,340	20,349	22.3

[1] Source: Manufacture and Sale of Farm Equipment, Bureau of the Census, U. S. Department of Commerce.

It will be noted that the electric equipment manufactured and sold in quantity is confined to a few items. Those assembled and released by the Bureau of the Census include only milking machines, cream separators, milk coolers, domes-

Digitized by Google

tic pumps, water systems, and brooders. It should be remembered that the figures shown are for years when the sales of these units were exceptionally high. Considering this fact it is obvious that with over 2,337,160 farms electrified we still have a long way to go to reach saturation of this group alone. We will not reach it until we have a specialized industry with quantity production. Even on dairy farms where electricity can be used in so many ways it has been shown on an average that only 10 percent of the connected load is used for farming operations; the other 90 percent is used for lighting, household appliances, and water pumping. The former figure is exceedingly low when we think of electric service as being used to increase farm production and income.

An electric motor-driven cream separator will cut the time in half as compared with doing it by hand. For the larger sizes it is now a one-man instead of a two-man job.

Records of 25,000 acres in the State of Oregon which were irrigated show a gross increase of $40 per acre over nonirrigated. Although irrigation is practiced in every State of the Nation, yet today it is only in its infancy in the humid regions.

Individual farmers report savings up to $100 per year by electric feed grinding, but here too we cannot as yet speak of general use of electric-feed grinding on the farm.

Numerous other activities could be quoted where electricity has been successfully used on the farm. But anyone who has had a chance to see the fine research work being done in the various colleges will at once realize that the surface has not yet been scratched, and that manufacturers will find a ready market for many items now in the development stage in the colleges or in the minds or the cellars of individual inventors. Until recently there was very little incentive for manufacturers to spend money on the development of new devices for the farm. Such new items are hard to sell, they are expensive to sell. Farmers are far apart from each other and the very sales effort required for introducing a new item on the farm makes the cost of the article in many cases prohibitive. The Rural Electrification Administration cooperatives use a group purchase system, and they can arrange with manufacturers to cover a quantity purchase by one agreement. Since November 1939 the Rural Electrification Administration cooperatives purchased most of their meters under the group purchase plan, totaling about 4¾ millions of dollars, to the satisfaction of both the consumers and manufacturers. While all the service transformers for new construction have been furnished by the contractor, the cooperatives used the group purchase plan for securing close to 25,000 transformers for extensions, totaling nearly 2½ million dollars. Quite a few other items have been successfully handled through the group purchase plan, making it unnecessary for the manufacturers to try to sell a new item from house to house.

It is important to realize that whatever is manufactured for the farmer must be low in price, rugged and simple in operation. Only quantity production can bring about such devices.

It is gratifying to be able to report that there are quite a number of progressive American manufacturers who have been giving this matter their careful attention and have been spending considerable sums of money on development of many devices that are suitable for quantity production.

One manufacturer developed a self-contained quick-freezer and cold-storage unit having a capacity of 20 cubic feet, which means that it will hold about 1,000 pounds of meat or 500 pounds of fruit or vegetables. It is sufficiently small in dimensions to be accommodated on the back porch of the house, and it is estimated that on a quantity-production basis it would cost less than $300. There is no question that there is an enormous market for such an item.

Another manufacturer, to make it possible for the farmer to grind his own whole-wheat flour and cereals, making it unnecessary to ship his wheat to the factory and then get it back again in the form of flour, developed a small kitchen-type flour mill weighing 25 pounds and able to grind 20 to 40 pounds of flour per hour. The cost of this little mill based on quantity production will not exceed $25, and it is hoped that eventually it will have an attachment so that the standard makes of mixer attachments in the kitchen can be attached to the mill without the necessity of buying a mixer. But this, along with the freezer, had to be put to sleep temporarily on account of the war.

Dehydration is another very important item. We know, of course, that there is a great deal of commercial dehydration going on in this country and that dehydration made it possible to send enormous quantities of food abroad which

Digitized by Google

otherwise could not have been sent. But two problems on the farm are as yet unsolved. First, everyone who has traveled through the country knows that enormous quantities of apples, peaches, and some vegetables go to waste because the farmer cannot afford to harvest them. Second, it should be made possible for the farmer to dehydrate such fruits and vegetables for his own use. A small kitchen-type dehydrator would solve these problems. One progressive manufacturer developed a small dehydrator weighing less than 100 pounds and being 28 by 20 by 23 inches in dimensions. This little dehydrator does not call for special wiring because the consumption is so low that it can be attached to the house circuit. It can produce in 12 hours 4 pounds of dehydrated apples from 25 pounds of apples, and consumes only 2.4 kilowatt-hours per pound of dehydrated apples. This item is likewise kept in abeyance due to the war.

These are outstanding examples of the difference between home-made equipment and manufactured equipment. Numerous types of dehydrators have been designed by various schools and the designs have been sent to the farmers advising them to produce those dehydrators themselves. It is not necessary to dwell upon the fact that during this critical wartime manpower on the farm is now very scarce and that the farmer has no time to devote to the production of mechanical equipment, but even in peacetime very few farmers would be interested in producing such a device if a better commercial product were available at a reasonable price. Besides, all of the designs for home-made equipment show electricity consumption much greater than the one proposed by the manufacturer. Some of the home-made dehydrators require as much as 5 kilowatt-hours per pound of dried apples as against the 2.4 kilowatt-hours that the manufactured equipment would require. There is no question that there is a market for hundreds of thousands of such small dehydrators if produced in quantity, of high quality and at a low price. The estimated price of this particular dehydrator is about $36, based on a quantity of 5,000. But other manufacturers are likewise working on the development of a small dehydrator and no doubt when the market opens up the price will be lower.

The matter of chicken brooders is something for manufacturers as well as for an American Institute of Electrical Engineers committee to study. Here, too, the number of designs is so great as to be bewildering and make it difficult for a farmer to select the type of brooder he should buy, to say nothing of making one himself. It should be possible now to crystallize a small number of standard designs that will meet all the requirements of the various agricultural schools and individual farmers and prepare some definite specifications under the auspices of A. S. A. This, and only this, will make it possible for reputable manufacturers to go into quantity production of brooders and for the farmers to get the best brooders for the lowest price.

Some studies have been made on soil treatment by application of electricity, and there is a beginning of promising results. In one case, for instance, electrical soil treatment eliminated entirely the wild morning glory (bind weed). In another instance, a better-quality flax was produced after the soil was treated with an electrical process. This, too, should be studied by manufacturers with a view toward eventually producing standardized equipment for electric soil treatment. Experiments have been carried on to use electric light for the control of the European corn borer. You know, of course, what a pest the corn borer has been. I have been told that in some parts of the Corn Belt farmers have stopped raising sweet corn solely on account of the corn borer. These experiments likewise had to stop because the one who was outstanding in this work is now in the Army, but the work should be picked up again and standard equipment should be developed that could be sold to every farmer who raises corn.

Some research men have been working on the development of a small pasteurizer for the small farm that could be had at low cost, and the prospects are very promising. This work should have the attention of electrical manufacturers. It should be made possible for the small farmer to pasteurize his milk and sell it to the community and thus save a great amount of transportation.

The possibility of a storage-battery-driven electric tractor has not yet been exhausted. Some experiments were made prior to the depression but were dropped. It is difficult to predict whether or not such a tractor would be a success. It is possible that if the cost of energy for charging the batteries at night is very low a market would be opened for small tractors to be used by hundreds of thousands of small farmers.

There is a decided need for simplification of motor starters for medium-sized motors for farm use and also a reduction in the price of the starters.

Digitized by Google

When the war is over a great deal will be known about high frequencies that is not now known, and it is possible that high frequencies ranging from audio frequencies to ultra-high frequencies may have a great many applications on the farm. It may be possible to apply high frequency for soil treatment, and supersonic waves may possibly be applicable for extermination of pests. This subject calls for much more study by electrical engineers.

EXHIBIT No. 9

THE ENGINEER'S PLACE IN PUBLIC LIFE

[Excerpts from a speech by Harry Slattery before the St. Louis section of the American Society of Civil Engineers, April 27, 1942, St. Louis, Mo.]

Some time ago I expressed surprise that in spite of the great contributions by engineers to the development of the country there is no monument for any engineer in the city of Washington. One of the engineers on my staff said "How about the Washington Monument? Washington was an engineer." I replied that Washington was not really an engineer—he was a land surveyor. So you see that I even know the difference between a civil engineer and a land surveyor.

I don't think that the absence of monuments for engineers is due to the engineer's modesty. Engineers are no more modest than anyone else. It is probably due to the fact that, while the great structures conceived by engineers are spectacular, the engineer himself is not spectacular, because the public really never sees him in action.

I also know that civil engineering is both the oldest and broadest branch of engineering and that every engineer, to be an engineer at all, must know a little something about civil engineering. Civil engineering is still the foundation for all engineering. However, all this does not qualify me as an authority for presenting a paper to you on a technical subject. I am assuming therefore that you expected me to select a subject which is most familiar to me. This I have done.

What then is the engineer's place in American public life? Just now I may say that it is important for engineers not to exaggerate it. Just now we are engaged in a mechanical war, a machine war. Engineers are more in demand by the armed forces than anyone else. Many engineers have left by own staff in Rural Electrification Administration and joined the Army, the Navy, and the Marine Corps, practically all as commissioned officers. This applies both to older, experienced engineers, and the very brilliant young engineers who are fresh from school and are thoroughly versed in mathematics and physics. We have contributed an unusually great number of young engineers to the Signal Corps, each having an individual responsible mission. We also lost many engineers to private enterprises who temporarily pay more than the law permits us to pay. So even in my position as an administrator, who is not an engineer, struggling along the best I can to do the job entrusted to me with a curtailed engineering staff, I have to guard myself not to exaggerate the importance of the engineer in public life and at the same time give him full recognition for what he is and what he can do.

As a citizen he has the vote and he can run for public office like anyone else. As such he functions as a citizen and not as an engineer. He has the same rights and the same duties that everyone else has. He can be drafted in the Army like anyone else, with the possible advantage that he will more likely get a commission than anyone else. He can and is now and then appointed to responsible administrative office in the Government as is now and then a lawyer like myself, a professional Army officer like General Fleming, a philosopher like Henry Wallace, or a businessman like Donald Nelson. But when I, a lawyer, was appointed Administrator, I was not appointed to practice law but to administer an important Government business. So, too, when an engineer is selected to administer an important Government undertaking, he is not appointed to practice engineering, but to administer an important Government undertaking.

So you see what I am driving at. When I speak of the engineer in public life I do not speak of his extra-curricular activities but only of his engineering activity. And so the answer becomes quite simple. The engineer in public life should be an engineer. It is a big enough responsibility for anyone. The engineer in public life is responsible for the physical structure of public life. Whether it be civil engineering or any other branch of engineering, he has five distinct functions.

1. *Conception.*—Some must first conceive the idea that a certain engineering activity is required, be it a public highway, a river and harbor development, a

Digitized by Google

power development, a flood-control project, a navy yard or Army camp. This conception may or may not first appear in the mind of an engineer. It may appear in the mind of a great dreamer, a great idealist, like Theodore Roosevelt or George Norris. But as a rule the complete conception cannot be crystalized without the engineer. And here is perhaps one of his most important functions. He must be unbiased. He must not be influenced by either political, economic, or social prejudice. He must inject only the unbiased engineering viewpoint.

2. *Investigation.*—Once there is a conception, a complete engineering report, based on an engineering investigation, is called for before those responsible to the people can decide whether or not a project should be executed. Here the engineer must again show his lack of bias. There may be other considerations than those of mere engineering economy that may determine whether or not a proposed public undertaking should be carried out. There may be reasons of national defense, social reasons, educational reasons, and numerous other reasons of public policy. But the engineer should limit himself to a concise and unbiased engineering report, so presented that an executive who is not an engineer can decide for himself whether or not he should assume the responsibility for authorizing the project. I do not mean that all engineering mathematics should be so presented that the layman can understand them. But the presentation should be so that if he believes the engineering computations to be correct he can render a decision. If he desires to have the engineering computations checked, he should be able to turn them over to another engineer for checking. All unknown factors and all assumptions should be clearly stated, as should all sources of information. An engineer should be able to check another engineer's work without asking the other engineer any questions or even after the other engineer is dead. This feature cannot be overemphasized in public life.

3. *Design.*—After the investigation is completed, the project approved, and the money authorized, the final designs and specifications for construction must be prepared. I know that this is a more difficult job in public life than in private life. The engineer in public life must be less arbitrary; he cannot specify devices or methods controlled by a monopoly. He cannot specify patented devices. He cannot be as definite in his specifications as he can be in private life. It is more difficult for him to make sure that the contractor will use the best methods and the best materials. This, in my opinion, is a problem in government that has not yet been solved. It will have to be solved some day. The Government of the United States is the only authority that can issue patents, and yet the Government finds itself forced to prohibit its own departments to specify definitely some patented devices and methods and thus perhaps makes it imposible for public engineering to take advantage of the latest developments. But such rules and regulations become absolute necessities to avoid abuses. The problem is how to make it possible for public bodies to specify definite materials and methods without opening the door wide to abuses and without being accused of favoritism or discrimination. This is perhaps one of the most important problems for engineers in public life to solve. I know that engineers alone cannot solve it. But they can and should create suggestions.

4. *Construction.*—I guess I need not tell you civil engineers anything about this feature of the engineers' activity in public life. I merely wish to say that great opportunities lie ahead of you. I will only mention waterways. There is an enormous job to be done, and here in St. Louis there should be more interest in it than anywhere else. I can visualize this city, if all waterways are developed as they should be, as the crossroads of America. Your water-front improvement, like that of Chicago or Washington, is an engineering job.

5. *Operation.*—The only thing I can say here is that it is of great importance for those engineers who remain in civilian life during the war, handicapped as they are with lack of repair and maintenance materials and lack of skilled labor, to do all they can to prevent the great public works that are not directly war works from decaying. It is a difficult job, but engineers are used to doing difficult jobs.

I have barely mentioned the war. You all know your responsibilities as engineers in the war. You have to carry a great burden in this war, perhaps a greater burden than any other profession with the possible exception of the medical profession. But I want to say a word about post-war. Engineers are now very much in demand, in the Army and Navy as well as in civilian life. An engineer does not have to look for a job now: the job is looking for him. But what is going to happen after the war? What is going to happen to the engineers and the workmen now directly or indirectly engaged in war work? Will they all be out of a job? If they are, this is not America and we are fighting

Digitized by Google

for nothing. It cannot be permitted to be. I wonder if many of you have read Stewart Chase's recent book on Post-War Solutions? He puts the solution in the hands of that real pioneer of getting things done in the world—the American engineers. I have been in public life a long time and I am qualified to tell you that the building of America is by no means complete. My conception is that the building of America should really begin after the war. There are the great waterways to be built; there are homes to be built so that every American can, as he should, have a clean, decent, civilized place to live in. There is sanitation of the highest level to be established for everyone. And, as the Administrator of the Rural Electrification Administration, you will permit me to conclude with: And there is rural electrification to be broadened so that every American in the remotest place not only has a decent place to live in but has the benefit of electric light, running water, radio, and all the numerous advantages that a civilized American is entitled to have. Until this is done America is not yet built up. America is not yet civilized. This is something for all engineers to think about and to look toward a great post-war activity for the engineer in public life.

Mr. SLATTERY. I would like also to include a letter in the record.

Senator KILGORE. All right.

(The letter was marked "Exhibit No. 10" and follows:)

EXHIBIT No. 10

APRIL 9, 1943.

Senator HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

MY DEAR SENATOR: I am grateful for your kind invitation and your statement that my life-long advocacy of the problems that your science mobilization bill (S. 702) seeks to solve make it important that my views be presented to your committee today.

It is true that my whole adult life has been devoted to the cause of conservation, electric power, and scientific research and development in the interest of the common people of America. The struggle has been a long and hard one, but I can now see that it has not been in vain, and great accomplishments are clearly seen for the future. I keenly feel that one of the drawbacks in the past has been the lack of such an organization as you propose to create.

I am particularly interested in those features of the bill that would break monopolies. To me this is no new subject. I feel that the rural people of America suffer most from the monopolistic practices of some interests in this country because they are always the last to share in the benefits of modern development. Their burdens have not been sufficiently eased by modern science. The Power Trust has woked particularly against the interest of the rural dweller. Scarcity of materials is now impeding the expansion of rural electrical development, and it is my feeling that this bill will provide for more orderly use of the Nation's resources and thus minimize these scarcities. The office of scientific and technical mobilization, as envisioned in the bill, would provide for the development of new sources and substitute materials. The high cost of meters, electrical fixtures, and other equipment necessary to the maintenance of a farm have made it impossible for the small farmer to keep abreast of the country's development. The structure envisioned in the bill would, I feel, cure this situation.

Another great lack for the small farmer has been adequate food storage and refrigeration facilities. The office of scientific and technical mobilization would provide for their development. Heretofore our Rural Electrification Administration and other agencies set up to serve the rural population have been dependent upon the manufacture of electrical equipment for new products. This has been difficult because the manufacturer did nothing to disturb his price structure.

The farmer's prosperity is dependent in large measure upon the quality of local industry. It is implicit in this bill that decentralization of industry is intended. This would provide close and ready markets for farm products and their by-products and would obviate the necessity for intricate transportation systems.

I have pointed out only a few of the ways that this proposed legislation can help the rural people of America. These, I think, are obvious from a cursory examination of the bill. I hope that when I appear before the committee I will be able to bring out the many other benefits which I am sure are inherent in this measure.

Thank you again for calling on me in this connection and please accept my sincere congratulations for your work in the interest of the American people.

Sincerely yours,

HARRY SLATTERY.

Digitized by Google

Mr. SLATTERY. Now, Senator, I would like to come back to a point I wanted to make. It is very clear that, as a Government man, I have certain limitations on my expression about the Government and the war and post-war.

Senator KILGORE. I can appreciate that.

Mr. SLATTERY. I think it is perfectly evident, however, that the things which are developed by men who are paid by the Government should remain with the Government, and when they are used to enrich someone else it seems to me to be a violation of the whole ethics of the Government service.

I would like to close by saying that the Rural Electrification Administration has great hopes for the post-war period. As I said a minute ago, I went through the days of the last war with Secretary Lane, when we were able to do a certain amount of good work with and for the soldiers who returned.

I think, if you will look back to the Civil War period and consider how the men who came back built the transcontinental railroads and other public works, then today's rural electrification problem seems—to use a good term—a "natural." We have hundreds of projects which are held up on by the wartime limitation of materials. We have those practically processed, and in the post-war era they will give a great deal of employment. It will be a public-works program in a real sense, and the men who will come out of the Government service trained as electrical engineers, mechanical engineers, and chemists will have a great field of endeavor opening up for them.

I assume you have seen the report of the National Resources Planning Board which recommends rural electrification as a possibility.

Senator KILGORE. I think that one of the most pitiful episodes of the whole period of the First World War was the picture of the man in the service being handed $50 and turned loose to hunt a job at the end of the war.

I was in Detroit after the last war and saw a park in front of the Detroit Free Press Building simply covered with discharged soldiers sleeping on newspapers that the Detroit Free Press gave them to sleep on. The shelters were all filled with men hunting jobs. It is my hope, and I know also President Roosevelt's hope, that we will be able to do some planning so that when this war is over a man will be discharged from the Army to accept a job, and we will avoid that horrible year of readjustment which we went through after the last war, a year which was fraught with suffering and pain in the United States.

And in this electrification program and various other programs that the Government is building up, it is my hope that it will give the smaller plants work to do.

Mr. SLATTERY. Senator, along that line, I can say that Rural Electrification Administration has spent about $500,000,000, and you have seen in your own State how the effects of the Rural Electrification Administration and its program are widespread.

Senator KILGORE. It is unfortunate that we have not been able in my State to take advantage of it, because of certain conditions which existed. The present Governor is heartily in sympathy with the program, but in the past that policy was not always followed by the State administration—even where there was no conflict with any utility company and where it would be a self-sustaining thing.

Digitized by Google

There were vigorous fights to make the program comply with little trifling regulations which did not fit the situation and all that type of thing.

Dealing with the company in which all the stockholders are also purchasers of its service is a little different from dealing with the company where the stockholders are not the consumers.

Mr. SLATTERY. We have received word from the Canadians, in Manitoba, and Ontario, and we have received a letter from Australia to the effect that they are very definitely going all out on the question of rural electrification in the post-war period.

They have made surveys and have a rather elaborated program for it.

Later on we will have a good deal of definite information from the electrified-farms survey, which will be a very complete survey made by engineers, not a horseback survey but a very thorough one.

Senator KILGORE. Mr. Slattery, I wish you would furnish us for the record the results of any surveys which have already been made by your organization on the number of unelectrified farms yet to be electrified and the number that are now electrified.

Mr. SLATTERY. I will be glad to, sir.

(The tables referred to were marked "Exhibit No. 11" and filed with the committee.)

Thank you very much.

Mr. SLATTERY. Thank you, sir.

Senator KILGORE. Mr. Tynes is the next witness.

STATEMENT OF FINLEY TYNES, SECRETARY-MANAGER OF THE STAUNTON AND AUGUSTA COUNTY CHAMBER OF COMMERCE, STAUNTON, VA.

(Mr. Tynes was duly sworn as a witness by Senator Kilgore.)

Senator KILGORE. You are Mr. Finley Tynes, secretary-manager of the Staunton and Augusta County Chamber of Commerce, of Staunton, Va.; is that correct?

Mr. TYNES. That is correct, sir.

Senator KILGORE. We are glad to have you here today.

Mr. TYNES. Senator, I am not one of these old-line chamber-of-commerce secretaries who is a showman. I am a workingman and not used to making speeches or appearing before committees. I have prepared a few of my own opinions, and the opinions of some representative business groups, and with your permission I will read them rather than make a statement otherwise.

Senator KILGORE. You may do that, sir, and we may ask you questions as you go along.

Mr. TYNES. That is perfectly all right.

My name is Finley Tynes. I am a native of Staunton, Va., where I am now secretary-manager of the chamber of commerce. My interest in the science mobilization bill stems from my conviction that this legislation is desperately needed and should be of great help to such a community as the one I represent. Ours is a town of approximately 15,000, perhaps the 10th city in Virginia, typical of Virginia, of the South, and indeed of many hundreds of small cities throughout every one of the 48 States of the Union.

Digitized by Google

As secretary of the chamber of commerce, one of my responsibilities is to see that commerce and industry in my community maintain and increase their profitability and usefulness to the community. In modern days of stiff competition success depends upon new products and new processes—new products to hold old and gain new markets, new processes to keep down costs. In Staunton and Augusta County, one of the wealthiest counties in the State, businesses are small. They do not, for the most part, have funds or facilities for research either into new products or new processes, as do large corporations. I support this bill because I believe it will make available to small companies research facilities and give them access to new inventions and processes to which they are now denied.

Another of my responsibilities is to maintain the economic health of the entire area by stimulating the growth and immigration of new industries so that the natural resources that now lie dormant or only half developed may be united with the labor resources still available in the community to bring additional prosperity to it. New industries today depend greatly upon new products. This bill would make available for commercial exploitation new products, and where necessary could carry them through the pioneering or pilot stage, so that the inordinate risks attendant upon new developments may in part be absorbed in such a way that excessive burdens are not placed upon small enterprises. The bill would make it possible for small businesses and small aggregations of local capital to enter into new activities with encouragement from the scientific arm of the Government, instead of meeting the tremendous obstacles they now encounter.

You may wonder how I became interested in these problems and in this bill. Let me refer you to purpose (1) of the bill "to appraise the current use of scientific and technical knowledge, facilities, and personnel, and to develop comprehensive national programs for the maximum use of science and technology in the national interest in periods of peace and war."

Such an appraisal is sorely needed. I am surprised that it has not already been made. No Federal or regional representative or agency of a technological kind has ever to my knowledge come to Augusta County to find out what we could do for the war effort, for defense industries, for the mobilization of our scientific or technical facilities or personnel.

I suppose, Senator, there have been at least 50 Government men representing one or another Government bureaus who have come down there to take our waste paper, rags, rubber, and scrap metal and, in several instances to ask how much factory space we had. Frequently we were not even asked what we made in the factories or what various and sundry services were contained there.

We in Staunton and Augusta County, however, were not so negligent. We felt that we could be of use. So we organized our own inventory of facilities that might be used in what in those days we call the "defense program." We, along with the adjoining counties of Rockingham and Shenandoah, organized back in 1940 the first small business facilities pool, I believe, in the entire country, the "Shenandoah Pool." We listed the small business manufacturing and technical facilities in the Shenandoah Valley around Staunton. Instead of

Digitized by Google

Washington coming to us we had to go to Washington. Some of our findings were put to use. Mostly they were not, but that is not the point. The point is that every community has something to offer which could be inventoried and then utilized as needed. That is why, I say, that a bill that proposed to survey scientific and technical facilities throughout the country is sorely needed.

Purpose (2) of the bill is "to mobilize for the prosecution of the war all scientific and technical facilities and personnel." Just as no attempt was made by the Government to inventory our facilities so no attempt was made to mobilize them. I think such mobilization is needed and needed now. Out of six of our major factories in Augusta County only two have been able directly to shift over to war or semiwar work. Yet the others would be glad and are indeed anxious to do so if the way how could be made clear to them.

I could go on with other purposes of the bill. But my eye is particular struck by purpose (8):

"to promote interest in scientific and technical education, and to provide for all qualified persons the means of scientific and technical training and employment."

Of the 16 boys in my high-school graduating class I am the only one who now lives in Staunton. Singularly for any graduating class, all these boys have made good. Some are prominent in business and the professions; but they have all had to carry on elsewhere than in Staunton. Several showed promise in science. None are now scientists. Why? Probably because of the lack of opportunity for scientific training in our small city and because there were no new industries opening up to stimulate the inventive genius and enterprise of these young men.

I might state that I had to do that and for 14 years was away from Staunton before I could get a job back there, myself. I just mentioned 16 boys in my class, and I think there were 23 girls, but I have not kept track of them. There might have been a Madam Curie in that crowd, and the lack of opportunity may have denied our country of such much needed services.

It is my hope and expectation that when this bill becomes law help will be given to the schools in towns such as Staunton to provide additional training in science; and in their business opportunities to provide scope for the enterprise and zeal of able young persons.

Let me give your committee a few examples of how this bill could or should be of help in my community—and when I say my community I suspect that what I say goes for a great many communities, hundreds, perhaps thousands, of them, each with their own local conditions, all over the country. Ours is an apple country. What we need is someone to do for the apple what Carver did for the peanut. Surely, more can be made from apples than apple sauce, apple butter, cider, and applejack. Millions of apples rot under our trees each year, apples that an inventive genius could surely introduce in some form or product into the stream of profitable commerce.

Each town and city has its inventors regarded half as geniuses and half as cranks by neighbors and townspeople. But upon their unsupported shoulders has been erected the industrial greatness of America. I think it is time we gave them some help. One of my neighbors is a

Digitized by Google

man who has long been trying to develop an up-to-date method for grading and packaging apples. And apple packaging, I am sorry to say, lags behind the packaging of many other products. This man has spent hundreds of dollars, probably more than he could well afford, to advance his belief that some solution to this problem must and can be had. Such a discovery could do a great deal for the entire apple industry of the Shenandoah. Yet his work is at a standstill. It is my hope that an organization such as the Office of Scientific and Technical Mobilization would not consider this problem too lowly, but would help lone inventors everywhere to bring their ideas to fruition.

I need hardly tell you, Mr. Chairman, that our chamber is opposed to waste of public funds and to the growth of sprawling bureaucracies. But we believe that this is not just another agency or bureau. Rather, we see in this office the elimination of 18 or 20 through the coordination of their work in 1 central office. It is just such streamlining that has long been needed in Government agencies. I would not, however, wish to see this streamlining confined to the national level alone. It is our hope that centralized planning and coordination may be accomplished with decentralization of operation to the maximum extent. I want to see a place nearby where the local inventor, local businessman, local scientist, and local engineer can go for help and advice. I want to see government going out to the people to stimulate and find the local inventor and small businessman and engineer and scientist and bring him into the war effort at the highest level of his ability. I think the organization set forth in your bill can achieve this. And this certainly should be its early and continuing aim.

Thurman Arnold, I understand, has described this bill as the Magna Carta of science. I think it is also a Magna Carta for the small city and the small town and small business. And I am gratified to be able to offer the committee studying these measures the wholehearted and enthusiastic support of a large and representative cross-section of the agricultural, commercial, and industrial interests of Staunton, Va. I also fully believe that I do voice the sentiments of the vast majority of chambers of commerce secretaries in the smaller communities throughout the country.

Staunton, may I remind you, is the birthplace of Woodrow Wilson, whose political genius and statesmanship flourished in support for the new freedom, a freedom which I believe your bill, Mr. Chairman, will bring to the businessmen, inventors, and technical men of the typical small American community.

Senator KILGORE. I know your community fairly well and I know its surroundings.

You speak of decentralization of operation, and centralization of planning. That is the keynote of the whole bill. The idea is to utilize every possible existing facility. For instance, take your own city—how far are you from Lexington?

Mr. TYNES. Thirty-eight miles.

Senator KILGORE. And Lexington has publicly owned laboratory facilities in connection with the two colleges?

Mr. TYNES. Yes, sir.

Senator KILGORE. We have found here that the college laboratory facilities have not been encouraged to get into the picture, have had little to work with, and have had no problems presented to them.

Mr. TYNES. Which I think is a mistake.

Digitized by Google

Senator KILGORE. Yes; they can be of tremendous assistance. Those laboratories already in existence in the Shenandoah, if they were properly coordinated, could render valuable assistance and encouragement. If they were given some problems they would solve them.

Mr. TYNES. Senator, they would love it. I have talked to a lot of them.

Senator KILGORE. Another thing, don't you find that your skilled mechanics and workmen do not like to leave their homes in Staunton and go to congested areas, but do better work when they can live at home under comfortable conditions and where, the fact is, they can live better on less dollar expenditure which makes for a lower cost product in the plants even though it requires a little more planning?

I recently saw a great row of machinery which took in an aluminum casting at one end, and worked it on down through the line and it came out at the other end of the line as a completely bored cylinder, shaped, fitted, drilled, and even threaded and polished. It was a wonderful thing to me but it was simply a connection of various machines hooked into a line, and they were fed together.

You could take those machines separately and turn out the same cylinder. The plant with the necessary equipment could bore and produce an airplane cylinder just as easily in Staunton as could be done by hooking those machines together in this big plant. The work could be done under proper conditions without the tremendous cost of defense migration resting on us—millions are being spent on housing in the congested areas.

We would then be in shape at the conclusion of the war to convert back to a peace time economy with less lost motion, less displacement, and less cost to the Government.

Mr. TYNES. Senator, all I can do is add a great big exclamation point to what you have just said.

Senator KILGORE. I am glad to get your comments, because I am a small-town man myself. I live in a community about the same size as Staunton, and probably know more of the problems of towns under 25,000 than I do of those of the bigger cities. The majority of the population in the United States in normal times live either in the country or towns of that size. Every one of the plants in those towns grew up because there was a definite need for that plant, isn't that correct?

Mr. TYNES. That is true.

Senator KILGORE. With improved techniques, those small plants can compete and your community can still continue to exist and, in fact, grow and flourish. But without improved techniques, they cannot compete. The problem of patent pools and the grabbing of new developments is, I believe, hinged largely on the present lack of scientific planning—not centralization, but lack of it.

Mr. TYNES. I think so, sir.

Senator KILGORE. Do you have any questions, Mr. Collins?

Mr. COLLINS. Have any of your small industries had trouble converting to war conditions?

Mr. TYNES. I would not say that they have had trouble, they just have not converted.

Mr. COLLINS. Could you give us an example of where this bill might help them?

Digitized by Google

Mr. TYNES. Yes, sir. I think if someone, for instance, having made this survey of technical facilities and personnel, were to come down and say "What needs to be made down here is thus and so," some gadget for use in the war effort, there are plants there, machine shops, furniture factories, hosiery mills, that have lathes and other machinery which I know could turn out something for the war; but no one has shown them the way and they do not have money enough to pioneer in that field.

Mr. COLLINS. Do you have a rayon factory?

Mr. TYNES. We have a flourishing hosiery mill. We had a mill, in fact, three small mills, making very fine silk hosiery. When they could no longer obtain silk for those mills, they switched to nylon and manufactured nylon hosiery for a while. When nylon was no longer obtainable, they switched to rayon. Now that rayon has gone out, they have switched to lisle. In each instance—because the mills were not in the big swim—while there was not an actual shut-down of the plant, there was a material slowing down during the conversion period. They did not have access to——

Senator KILGORE. To advance information?

Mr. TYNES. Yes, sir. They had no access to any advance information so far as I know.

Senator KILGORE. And they had to go out and hunt it up for themselves?

Mr. TYNES. Yes, sir.

Senator KILGORE. And frequently hunt it up from their competitors; isn't that right?

Mr. TYNES. Yes, sir; that is correct.

Mr. COLLINS. I understand that you have traveled extensively visiting other towns. What have you found regarding the prevalence of research facilities of small businesses?

Mr. TYNES. Before I moved back to Staunton some 7 years ago, I suppose I must have visited eight or nine hundred factories of one kind or another. I have never seen a research laboratory set up in a factory that employed less than 500 people. I started to say 1,000, but I suppose that is an exaggeration.

Now, I have noticed all the larger factories have them, and they must have them for a purpose. Surely they must derive a benefit from them or they would not have them. But the smaller factories simply cannot afford them.

Senator KILGORE. Have you checked the letting of war contracts in the United States as contrasted with that in England?

Mr. TYNES. No, sir; I have not.

Senator KILGORE. The most recent figures show that here 80 percent of the war contracts have been let to 100 corporations, whereas in England 80 percent of the contracts are let to factories employing 200 or less employees.

There is another interesting fact which is in the testimony before this committee and that is that after the last World War, England, realizing the shortage of research, subsidized laboratories in small plants.

Of course, we have such a vast spread of territory that perhaps we could not do that. But it seems to me that it is significant that technical facilities were made available to the small plants in England

Digitized by Google

after the last war, and that those plants are carrying 80 percent of the load of the war work today in England.

There is another interesting aspect of that. Lord Beaverbrook made a statement in this country that England is utilizing machinery and equipment which we would not even think of using, that if they did not have a combination machine to make a shell, then they ran it through, say, four processes, and tried to run it fast enough through the four processes to make the shell as fast as we made one in one operation on one machine.

Mr. TYNES. Senator, I think it is a sad commentary on us that we have not taken a leaf from England's book there. Here we have built up, at tremendous expense and great loss of time, a great number of large factories up and down the land, which are literally yawning for raw materials, and which, as you explained a moment ago, created great movements of labor and numerous housing problems. If those in authority here had at least tried the "bits and pieces" method of manufacture, and then set up assembly plants in strategic spots, I think it would have been a great help. Such a procedure would have been difficult, and perhaps slow in getting under way, but in the long run it would have saved time, millions of dollars, a tremendous quantity of critical materials, and countless man-hours which had to be utilized in building and expanding factories when existing factories could have been put to better use.

Senator KILGORE. It is a peculiar thing that we are the only country engaged in the war which is not using that system but are still "big business" in our production methods. Our idea is still that good material can be produced only in a big plant.

Mr. COLLINS. Do you feel this bill could be of any help in developing mineral resources in your State?

Mr. TYNES. I feel that it would be. I cannot say that I know it would, because I am not a geologist; but I have a feling that there is just as much wealth under the soil there in Staunton and Augusta County as we grow on top of it. Specifically we know that we have some bauxite—a little of it is already being mined in a sporadic fashion by outside concerns—and I know we have some manganese.

Senator KILGORE. Don't you also have some iron?

Mr. TYNES. We may have a lot of it; I know we have some.

Senator KILGORE. It wasn't so very far from you that a large part of the iron was gotten for furnaces in Richmond in the Civil War, was it?

Mr. TYNES. No, sir.

Mr. COLLINS. Is your manganese being developed at all now?

Mr. TYNES. Not a great deal. There are two manganese mines in the southern section of the county, and I hear that a very fair grade of ore is coming from them.

Farmers come to me frequently to see whether they can get someone to come down from Washington to look at their property. They have been picking up black rocks which they have turned up with their plows, and they think that they perhaps have minerals which could be mined to advantage.

Senator KILGORE. The trouble with the iron ore, I think you will find, is that it is not as high a grade as the Mesabi Range iron. Because of the methods of manufacture now used in the United States and the fact that we refused to go into sponge iron, the ore is lying

Digitized by Google

dormant, just as is the iron ore in my own State, which is there in quantities.

Mr. TYNES. We are going to run out of scrap some day and have to use sponge and like it.

Senator KILGORE. Scrap has so far obviated the necessity of using sponge iron, but when we run out of scrap we will use sponge. We will probably get completely out of scrap before we will turn to sponge.

Mr. COLLINS. Are current developments financed by local capital or out of State capital?

Mr. TYNES. They are financed largely by out-of-State capital. It is not because we do not have the capital there. We have some men of considerable wealth in the county, but they are hesitant to take any risks when they know from the outset that they do not have access to all of the industrial research that is at the command of the big concerns.

Senator KILGORE. Yes; and outside capital is able to get licenses and various other things in a way that your local capital cannot; is that not correct?

Mr. TYNES. Yes, sir.

Mr. COLLINS. In your opinion, would this bill help with the development and use of local capital resources?

Mr. TYNES. I think very likely it would. If a group of men wanted to form a company to manufacture a given product and felt that there was some over-all agency, such as the Office provided for in this bill, to give them guidance, right from the start, I do not believe they would be so hesitant in risking their money as they are now.

Senator KILGORE. And also, if they felt they would be kept abreast of the most modern and latest shop practice, with the ability to obtain licenses on an equality with the larger companies; and the privilege of manufacturing and using modern methods without being faced with the possibility of a license revocation whereby they might be forced out of business, they would feel better about it investing their capital; is that not correct?

Mr. TYNES. Undoubtedly so, sir.

Mr. COLLINS. Are there any other features of the bill, Mr. Tynes, that appeal to you?

Mr. TYNES. Yes, sir. I like the over all cooperative idea, that this office would provide. It would be run something like a chamber of commerce is run. The chamber of commerce pools all of the best brains of a community and in effect sets itself up as a community workshop. I think the proposed Office of Scientific and Technical Mobilization has inherent in it the possibility of becoming a magnificent workshop around which would rally the best scientific and technical talent of the country.

I think, too, that we have not done enough to encourage scientific research development from a government standpoint.

If you will go to those countries which have encouraged and subsidized music, you will find that they have turned out good composers and musicians. I think that if this country did a little more to encourage—and in some instances, perhaps, subsidize—scientific research, we would get along faster and better.

Senator KILGORE. Mr. Tynes, we appreciate your coming here very much. We have been happy to have your statement.

Digitized by Google

I hope you will not object if we send copies of your testimony to other secretaries of chambers of commerce for their comments, sir.

Mr. TYNES. I believe that the majority of them will agree with what I have said, and what you have said, sir, and I certainly have no objection.

Senator KILGORE. That is, unless you get into a town in which the chamber of commerce is largely controlled by outside influence.

Mr. TYNES. Of course, there are some such chambers of commerce.

Senator KILGORE. The committee will now adjourn, subject to call of the Chair.

(Whereupon, at 1:30 p. m., the committee adjourned, subject to call of the Chair.)

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

TUESDAY, APRIL 27, 1943

UNITED STATES SENATE,
SUBCOMMITTEE ON SCIENTIFIC AND TECHNICAL MOBILIZATION
OF THE COMMITTEE ON MILITARY AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to notice, at 10 a. m., in room 135, Senate Office Building, Senator Elbert D. Thomas (acting chairman) presiding.

Present: Senators Thomas (acting chairman) and Murray.

Also present: Henry H. Collins, Jr., of the committee staff.

Senator THOMAS. The subcommittee will come to order.

Mr. Lindquist, will you state your name, your address, and your position; and then proceed as you wish, please?

STATEMENT OF JOHN A. LINDQUIST, CHAIRMAN (ACCOMPANIED BY FRANK WILBUR MAIN; LELAND G. SUTHERLAND; AND JOHN L. CAREY, SECRETARY), COMMITTEE ON ACCOUNTING MANPOWER OF THE AMERICAN INSTITUTE OF ACCOUNTANTS

Mr. LINDQUIST. My name is John A. Lindquist; I am from New York; and am chairman of the Committee on Accounting Manpower of the American Institute of Accountants. I am a partner in the firm of Ernst & Ernst in New York City. I have a statement which I should like to present on behalf of the institute and its committee.

Senator THOMAS. Very well.

Mr. LINDQUIST (reading):

The American Institute of Accountants' Committee on Accounting Manpower favors the provisions of section 3 (e) and section 5 (a) of Senate bill 702, in the belief that the most effective use of technical accounting personnel in the prosecution of the war requires the establishment of a central agency with authority to make conclusive recommendations for deferment of trained and experienced accountants from military service.

Our support of these provisions of Senate bill 702 is not based upon any desire that all trained and experienced accountants should be deferred from military service in the future, but only upon the conviction that a minimum number of essential accountants must be left in professional practice if the economic machinery which supports the war effort is not to be seriously impaired. The retention of this required minimum cannot be assured under the decentralized administration of selective service by local boards.

We are concerned exclusively with provisions of section 3 (e) and section 5 (a) of Senate bill 702, which relate to the mobilization of

Digitized by Google

scientific and technical manupower for the prosecution of the war. Our committee is not authorized to express any opinion with respect to any of the other features of the bill.

IDENTIFICATION OF WITNESSES

The American Institute of Accountants is the national organization of certified public accountants, founded in 1887. Its membership includes nearly 7,000 of the approximately 24,000 certified public accountants in the United States. A great majority of its members are in professional public accounting practice, although more than a thousand are officers of industrial corporations and Government agencies, and teachers of accounting.

The institute's headquarters are at 13 East Forty-first Street, New York. Its committee on accounting manpower, which submits this statement, was appointed for the purpose of cooperating with the War Manpower Commission and the national headquarters of the Selective Service System in an effort to facilitate the use of trained and experienced accountants in a manner which will best meet the needs of the armed services, the civilian war agencies of the Government, war industry, and other business essential to the support of the war effort.

UTILIZATION OF TRAINED AND EXPERIENCED ACCOUNTANTS IN THE WAR EFFORT

By the armed services: The younger unmarried accountants have gone to war. While there are undoubtedly some exceptions, we believe it may be fairly stated as a generalization that no able-bodied single men under 38 remain in public practice. Thousands of these younger men are serving in combat branches of the Army and Navy. Some casualties among them have already been reported. In addition to these men, however, the Army and Navy have taken a considerable number of accountants from the professional ranks, and are using them in the audit of war contractors' costs under cost-plus-fixed-fee contracts, the audit claims of contractors under terminated fixed-price contracts, analysis of costs in renegotiation proceedings, and in similar matters. Many of these accountants are serving as commissioned officers; others are employed as civilians.

By war industry and other business essential to support of the war effort: Essential industry requires the assistance of professional public accountants in the determination of allocation of elements of costs, in devising and installing procedures for accounting control of pay rolls and materials, in the audit of financial statements required as a basis of credit, in the calculation of reporting of taxes, and in the preparation of numerous reports required by various agencies of the Government. Professional public accounting firms rendering such services to essential enterprises are unable to procure a sufficient number of trained and experienced accountants to meet the present requirements.

A more detailed outline of the nature of the practice of public accounting is appended to this statement as an exhibit.

QUALIFICATIONS OF PROFESSIONAL PUBLIC ACCOUNTANTS

The certified public accountant certificate is the recognized legal evidence of qualification in the profession of public accounting. This

Digitized by Google

certificate is granted under authority of State laws, which, while varying somewhat in detail, practically all require a minimum amount of education and a written examination as a prerequisite to granting the certified public accountant certificate. The examination given in 45 States and Territories is a standard two-and-one-half-day examination, prepared by the board of examiners of the American Institute of Accountants, and adopted by the State boards concerned. Most of the leading universities have established courses in accounting, and a large proportion of the man who have entered the profession of accounting in recent years have been graduates of these universities. Generally speaking, at least 3 years' practical experience in public accounting is regarded as necessary preliminary training before an individual may be entrusted with responsible accounting work without close supervision.

AVAILABLE NUMBERS OF TRAINED AND EXPERIENCED PROFESSIONAL PUBLIC ACCOUNTANTS

There were before the war only about 22,000 certified public accountants in the United States, of whom a substantial number were not engaged in professional public accounting practice. Those who were engaged in professional practice before the war employed or were associated with a substantial number of accountants who had not yet obtained their certified public accountant certificates by the required State examinations. The exact number of these noncertified practitioners is not know, but, at any rate, it is clear that the entire body of professional accountants is not a significant number in terms of the Army's manpower requirements. In terms of efficient operation of the Nation's economic, industrial, and business machinery, however, this professional group has been recognized as of great importance.

Evidence of a shortage of trained and experienced accountants was presented to national headquarters of the Selective Service System by the American Institute of Accountants in March 1942. This evidence consisted of the opinions of some 275 accountants and teachers in all parts of the country. The National Roster of Scientific and Specialized Personnel is at this time considering the possibility of conducting a survey of the accounting profession to obtain statistical evidence of the extent of the shortage of trained and experienced accountants at this time. Great difficulty is now being encountered by the armed services and other Government war agencies in obtaining the services of a sufficient number of trained and experienced accountants to carry on their work.

THE STATUS OF PROFESSIONAL ACCOUNTANTS UNDER SELECTIVE SERVICE

Accounting services supplied to the war production program and to activities essential to support of the war effort are included in the group of technical, scientific, and management services listed among the 35 activities proclaimed essential by the War Manpower Commission. Certified public accountant is included among a list of essential occupations set forth in Activity and Occupation Bulletin No. 35, issued by national headquarters of the Selective Service System, March 1.

The National Roster of Scientific and Specialized Personnel has under consideration a request of the American Institute of Accountants

Digitized by Google

that a national committee be established by the War Manpower Commission, as authorized in Activity and Occupation Bulletin No. 35, to assist the Selective Service System by reviewing affidavits for occupational classification.

THE NEED FOR A COMPETENT CENTRAL AGENCY TO AUTHORIZE OCCUPATIONAL DEFERMENTS

The experience of the accounting profession under the Selective Service Act up to this time, which we presume must be similar to the experience of other professional and technical groups, has demonstrated the need for some central authoritative agency equipped to evaluate accurately the qualifications of an individual professional man or technician and to determine whether his contribution to the war effort in his present job is sufficient to warrant occupational deferment.

This committee has no general criticism of selective service local boards which, in general, have done a good job under the most difficult circumstances. Selective service local boards, with the guidance of directives and advisory bulletins from selective-service headquarters, are generally competent to evaluate the qualifications of workers in industry, agriculture, and commerce in terms of relationship to the war effort, but it is unreasonable to expect that those who serve on local boards should be in possession of the necessary information and experience to evaluate with equal success the qualifications of technically trained persons in highly specialized fields.

The profession recognized from the first that it would be necessary to relinquish a large proportion of its manpower as every other occupational group was required to do. The older practitioners accepted the inevitable necessity of carrying an increased burden to make up for the loss of the younger men. Firms have recognized the necessity of discontinuing some work normally undertaken which was not essential to the support of the war effort.

The point has now been reached, however, where the continuation of professional public accounting practice, even on a greatly reduced scale, is in real danger. If the situation continues for another year as it is now, there seems good reason to fear that no able-bodied men, under 38, without children, will remain in practice; and possibly later, married men with children and men in the age group between 38 and 45 will be withdrawn.

In considering a request for occupational classification of an individual certified public accountant or a trained and experienced professional staff accountant in the employ of a certified public accountant, the selective service local board is called upon to determine whether or not the clients being served by such individual are in activities essential to support of the war effort, whether or not the services rendered such clients are of a nature which contribute to the war effort, and whether or not the individual registrant can be replaced within a reasonable length of time. The last question involves the determination of whether or not a shortage exists locally. In this connection a peculiar difficulty is injected through the rather loose and widespread application of the term "accountant" to bookkeepers and clerks, many of whom possess civil-service ratings, who work on accounting records but are not qualified professional accountants.

Digitized by Google

Instances have been reported, for example, in which draft boards have inquired of the United States Employment Service as to whether or not there was a shortage of accountants, and the response has been in the negative because many bookkeepers and clerks describing themselves as accountants were registered with the United States Employment Service and, as a consequence, the request for occupational classification of a trained and experienced professional accountant has been denied, even though he seemed wholly eligible for occupational classification under the provisions of the selective-service occupational bulletins.

Local draft boards cannot be criticized for failure to make accurate analyses of such complex situations in view of the tremendous scope of the work of these boards, but it seems reasonable to assume that a central agency, concerned entirely with specialized and technical personnel, would be able to cope with such problems effectively. The examination of accounts and records and the certification of financial statements, for example, might seem to a draft board remote from activity necessary to war production, or to support of the war effort, yet in a given instance such work might be essential to the adequate financing of a war producer since both Government lending agencies and private credit grantors require reliable statements of financial position, and results of operations of enterprises which are applying for capital loans.

CONCLUSION

It is, therefore, our belief that it would be in the best interest of the Nation to enact into legislation the provisions of section 3 (e) and of section 5 (a) of Senate bill 702, which would transfer to an Office of Scientific and Technical Mobilization the powers, personnel, and facilities of the National Roster of Scientific and Specialized Personnel, and would authorize the administrator to determine whether occupational deferment should be granted to persons in scientific or technical occupations, certified with the approval of the chairman of the War Manpower Commission, as critical in the war effort, such determination to be conclusive upon selective service local boards.

Respectfully submitted.

(Signed) AMERICAN INSTITUTE OF ACCOUNTANTS,
COMMITTEE ON ACCOUNTING MANPOWER,
JOHN A. LINDQUIST, *Chairman*,
FRANK WILBUR MAIN,
LELAND G. SUTHERLAND,
JOHN L. CAREY, *Secretary*.

To this statement is attached an exhibit, which is a brief and comprehensive definition of the practice of public accounting.

(The material submitted was marked "Exhibit No. 12" and follows:)

EXHIBIT NO. 12

THE PRACTICE OF PUBLIC ACCOUNTING

For many years the practice of public accounting consisted largely of annual examinations of financial statements for credit, financing, stockholders, etc. A greater part of this work came in the first 3 months of the calendar year.

Digitized by Google

In recent years such services have become relatively less important in comparison with other services to such an extent that public accountants are now serving their clients throughout the year in various special matters involving a wide variety of management's problems. At the present time, the most valuable part of the services of a well qualified public accountant and yet the most difficult to appraise and define is his advice and counsel to business management.

The huge expansion of war production, the introduction of new products and methods, industry's loss of accounting personnel and the shortage of replacements for them, and many other factors, have greatly increased the demand upon skilled public accountants to meet these new problems.

Among the activities of skilled accountants required by these special matters are:

PRODUCTION

(1) *Advising management in organization and personnel matters.*—The precipitous growth of industry for war production has far surpassed the ability of management to handle the problems related to such expansion. Therefore, management seeks the expert assistance available in the field of public accounting.

(2) *Cost determinations.*—All contracts are based upon costs. Skilled counsel is required in devising methods for determining and allocating the elements of cost, first, in the preparation of estimates before prices are determined and, second, to ascertain actual costs of production.

(3) *Production planning and control.*—Devising procedures for planning production schedules, issuing manufacturing orders, recording production and accounting for same, thus facilitating the flow of production and preventing bottlenecks and other interruptions.

(4) *Wage incentive plans.*—Devising and installing plans for payment for labor operations, including incentive bonuses for increasing production, also devising means for adequately accounting for pay-roll expenditures, establishing standards for such costs and instituting methods for checking and control of same. The effect of these procedures is to increase the effort of the individual workman, providing an adequate reward or incentive for such increased effort and to minimize disputes and misunderstandings regarding matters of compensation.

(5) *Material Control.*—Devising and installing procedures for procurement of materials, receiving, storing, and issuing of such items to manufacturing operations, both as to physical arrangements and record-keeping to the end that materials will be available when needed and yet not permit undue accumulation of inventories that may be needed elsewhere; also to prevent excessive investment in such items.

(6) *Cost records.*—Establishing suitable means for recording actual production costs, reporting and checking such costs against previous estimates, thus providing the means for preventing excessive costs and unnecessary delays in production.

(7) *Renegotiation of contracts.*—In order to deal intelligently with renegotiation of war contracts, adequate records of costs must be available. Procedures must be installed for that purpose, then information submitted for the use of governmental agencies and the contractor to determine actual costs and profit margins. The public accountant, because of wide experience in many types of manufacturing enterprises, contributes essential services to the Government and the contractors in connection with all such matters.

FINANCIAL

(1) *Financial planning.*—In most cases involving plant expansion, increased inventories, etc., it is necessary to prepare forecasts for the purpose of making the necessary financial plans, the preparation of such forecasts requiring the utmost skill and experience.

(2) *Credit arrangements to finance plant expansions and working capital.*—(*a*) Preparation of certified financial statements, cost schedules, and other data required by banks and governmental financing agencies.

(*b*) Forecasting cash requirements to show time and amount of financial assistance required.

(*c*) Forecasting operating results to support applications for loans.

(*d*) Participation in conferences to assist both parties in completing arrangements.

Digitized by Google

TAXATION

(1) *Preparing applications for necessity certificates relating to emergency plant facilities.*—Formal application required in order that new plant facilities may be amortized over period of emergency.

(2) *Preparation of income, excess profits, and other tax returns.*—(*a*) Corporation returns are intricate and accuracy is imperative because of high rates.

(*b*) Most companies call on certified public accountants for assistance in preparation of tax returns.

GENERAL

(1) *Periodic verification of corporate financial statements required by corporate procedure, governmental agencies, and others.*—Such statements include requirements of Securities and Exchange Commission for certified financial schedules, certified financial statements required by banks and other financial agencies, certified financial statements for submission to corporate directors and stockholders.

Senator THOMAS. There are one or two questions which I would like to have answered for the record.

In view of the common meaning of the term "technical personnel," why would you say that accountants should be included under that classification?

Mr. LINDQUIST. Because a considerable period of technical training is necessary to qualify a man for the practice of public accounting. In addition to that he must take a comprehensive examination in technical subjects given by states as a condition to recognition as a certified public accountant.

Senator THOMAS. Have those examinations become pretty uniform throughout the country?

Mr. LINDQUIST. They are uniform throughout 45 States and Territories and are prepared by the American Institute of Accountants.

Senator THOMAS. To what extent are accountants working in Government agencies, and what usually constitutes their responsibilities?

Mr. LINDQUIST. That is a very broad question, Senator, which I cannot answer categorically. They serve in capacities ranging from that of audit clerk to the very technical and responsible positions of, say, chief auditor on war contract projects.

Senator THOMAS. They use them also in the F. B. I.?

Mr. LINDQUIST. There are accountants in the F. B. I, yes.

Senator THOMAS. And in the Treasury Department?

Mr. LINDQUIST. In the Treasury Department.

Senator THOMAS. And on tax matters?

Mr. LINDQUIST. Yes.

Senator THOMAS. And accountants are generally serving all the courts, are they not, in bankruptcy cases?

Mr. LINDQUIST. Yes; they serve in bankruptcy cases.

Mr. COLLINS. Of the 24,000 C. P. A.'s which you mentioned, how many of those are in Federal employ?

Mr. LINDQUIST. That I do not know, Mr. Collins.

Mr. COLLINS. Do you know, Mr. Carey?

Mr. CAREY. We haven't any exact statistics, but we think there must be several thousand now serving the War Department and the Navy Department, the R. F. C., the F. B. I., and Treasury, which were mentioned, and other Government agencies. There has been an influx in the last 2 years.

Digitized by Google

Senator THOMAS. Generally speaking, when a man becomes established as a public accountant he is so much better off economically in private practice than he is in Government that he stays there, does he not?

Mr. MAIN. I think that is true, except in wartime.

Many have now gone into Government service at an economic sacrifice.

Senator THOMAS. The standards of the Civil Service Commission are not quite as high as the State standards—a man can get qualified as first-class accountant on examination under the civil service without being a C. P. A., can he not?

Mr. LINDQUIST. That is true.

Senator THOMAS. Still, considering the Civil Service examination and the qualifications that a man has to have to be considered for a job, I suppose the standards of the Civil Service are perhaps just as high in the long run?

Mr. LINDQUIST. That, again, is a question that I cannot answer categorically.

Do you know, Mr. Main?

Senator THOMAS. It is a question of opinion, naturally. You can never prove that Bill Jones without any qualifications on paper sometimes is a better man than another fellow with them.

Mr. MAIN. One of the facts that must be kept in mind is that before a man can become a certified public accountant, in practically all of the States, it is necessary not only to pass an examination, but also to meet certain educational requirements, and on top of that to have a certain number of years of experience in accounting, a number of which years must be in public accountancy.

Senator THOMAS. Doesn't he always have to have certain sponsors, too, before his certificate is issued to him?

Mr. MAIN. Yes; he must have certain sponsors, but I would say that there would be no more difficulty there than there would be in Civil Service.

Senator THOMAS. That is true.

Mr. LINDQUIST. I might add that for a certified public accountant's certificate in at least two States, I believe, a college degree from a recognized college or university with a major in accounting is a prerequisite.

Senator THOMAS. It is a baccalaureate degree?

Mr. LINDQUIST. That is right.

Mr. MAIN. That is in only two of the States. The others require a high-school education.

Mr. COLLINS. Of the 24,000 C. P. A's in the United States, how many of them do you estimate have been inducted in the armed services?

Mr. LINDQUIST. Have you anything on that, Mr. Carey?

Mr. CAREY. I could not make any statement on that without giving a very wild guess, Mr. Collins. The National Roster, as Mr. Lindquist's statement indicates, is now considering making a detailed survey to get the answer to that and other questions.

We know there has been a very high percentage of loss, in some firms 30 or 40 percent, but how it would run throughout the country I can't answer.

Digitized by Google

Mr. COLLINS. You don't have any information on how many are in the armed services, whether by induction or by volunteering?

Mr. CAREY. No. We know it runs into the thousands.

Senator THOMAS. Your statement contains a general description of the place of accountants in the war program. Could you be more specific and illustrate just how they are used?

Mr. LINDQUIST. They have been used by Government agencies in connection with the certification of costs on war project contracts; in the certification of the final construction costs on emergency plant facilities contracts, on the basis of which compensation is paid.

They are used in establishing and certifying costs under certain contracts between contractors and the war agencies of the Government, as, for example, production and distribution costs of certain products.

They have also been used in certifying the costs of subcontractors on supply contracts.

They have been used and are being used in certifying the excess cost of bringing fuel oil and gasoline to the eastern seaboard. For example, by way of railroad tank car rather than the customary method of tanker through the Gulf and around Florida and up the Eastern Seacoast.

Those are some. Perhaps the other gentlemen may be able to add to those.

Senator THOMAS. What difficulty is there being encountered in industry and in the Government due to shortages of accountants?

Mr. LINDQUIST. It is becoming difficult to render promptly the services that war contractors need in connection with the establishment of adequate cost systems where they don't already have them, and costs are essential under contracts with the Government. That is an illustration of one way in which the public accounting profession cannot properly, and as adequately as it would like to, serve war contractors.

Mr. MAIN. I might add that a corporation engaged in war work is called upon to expand and enlarge, sometimes to increase their facilities by as much as 10 times, and with their own forces depleted they are constantly calling upon public accountants to render more and more services and to take care of the additional work which must be done in handling Government contracts. It is quite a different thing to handle a Government contract than it is to handle a contract with a private concern because the Government contract is subject to audit, subject to renegotiation, and subject to review, such as is not customary in ordinary business.

Senator THOMAS. Are there any other questions?

Mr. CAREY. You asked about the difficulties that the Government agencies encounter. In our office we try to help those agencies in securing men when they need them—men with accounting training. It happens that the Navy on its cost inspection work and also in its renegotiation work, and the War Department in its contract auditing, and the Reconstruction Finance Corporation, have had a great deal of difficulty in securing enough trained accountants to do the work they have to do to protect the Government expenditures under these contracts. Their men are drafted just the same as the members of

Digitized by Google

the staff of the accounting firm. A shortage takes place in all areas simultaneously.

Senator MURRAY. Is there no policy now in the selective service with respect to deferring certified public accountants?

Mr. LINDQUIST. The selective service has issued what is known as Occupational and Activity Bulletin No. 35 which lists professional accounting service as an essential activity, and a certified public accountant as a man engaged in essential activity, but that does no more than entitle a man to consideration by a local draft board for occupational deferment. It does not provide occupational deferment in and of itself.

Senator MURRAY. And usually they are not deferred. I know a young man who is a graduate of the Harvard School of Business Administration, a certified accountant with a number of years' experience in New York City, who was drafted notwithstanding the fact that he was a very highly experienced accountant, and was married. He was taken and is in north Africa now.

Mr. MAIN. That case could be multiplied, Senator.

Mr. LINDQUIST. Deferment has been denied in many, many cases.

Senator MURRAY. It is the same mistake as was made in reference to deferring medical students and dental students and interns in hospitals, and so forth. We tried to get them to consider it at the very outset.

Senator THOMAS. Are there any other questions?

(No response.)

Senator THOMAS. Thank you very much for coming, gentlemen; we appreciate your being here.

Mr. MAIN. We appreciate the opportunity to be here, Senator.

Senator THOMAS. The subcommittee will now stand adjourned, subject to the call of the chairman.

(Whereupon, an adjournment was taken, subject to the call of the chairman.)

×

Digitized by Google

Digitized by Google

4. M59 : Sc12

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 3

JUNE 17, 1943

EXHIBITS

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1943

Digitized by Google

Digitized by Google

4. M59 2: Sc12

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 3

JUNE 17, 1943

EXHIBITS

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1943

Digitized by Google

Digitized by Google

4. M59 : Sc 2

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 3

JUNE 17, 1943

EXHIBITS

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1943

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HENRY H. COLLINS, Jr., *Executive Secretary*
HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

Statement of—
Carlton Nau, secretary-manager, American Public Power Association. Page 197

SCHEDULE OF EXHIBITS

No.	Exhibit	Appears on page
17	Historical note on municipal power projects in the United States, submitted by Carlton Nau	213
18	3 technical committees of the American Institute of Electrical Engineers, submitted by Carlton Nau	214
19	Excerpts from Federal Trade Commission Report on Utility Corporations, submitted by Carlton Nau	215
20	Albert Parsons Sachs, address by, at the meeting of the Association of Consulting Chemists and Chemical Engineers, Inc., New York, N. Y., Apr. 26, 1943	217
21	Albert Parsons Sachs, letter from	227
22	B. K. Thorogood, Franklin Technical Institute, Boston, Mass., letter from	227
23	M. Y. Seaton, executive vice president, Westvaco Chlorine Products Corporation, New York, N. Y., letter from	227
24	M. Y. Seaton, letter to, from H. M. Kilgore	228
25	Herbert D. Imrie, of Abbot A. Hanks, Inc., San Francisco, Calif., letter from	230
26	Herbert D. Imrie, letter to, from Senator Edwin C. Johnson	230
27	Jerome Alexander, New York City, letter from	230
28	Jerome Alexander, letter to, from H. M. Kilgore	231
29	E. J. Brown, president, International Brotherhood of Electrical Workers, Washington, D. C., letter from	231
30	E. J. Brown, letter to, from H. M. Kilgore	232
31	Wilson J. McDonald, secretary, chamber of commerce, Petoskey, Mich., letter from	232
32	L. V. Heilbrunn, associate professor of zoology, University of Pennsylvania, letter from	233
33	J. Paul Visscher, professor of biology, Western Reserve University, letter from	233
34	Paul R. Farnsworth, acting executive head, Stanford University, letter from	234
35	Gordon W. Allport, chairman, department of psychology, Harvard University, letter from	234
36	Gordon W. Allport, letter to, from H. M. Kilgore	234
37	Gregory Pincus, professor of experimental zoology, Clark University, letter from	235
38	Arnold Dresden, Swarthmore College, letter from	236
39	S. J. Holmes, University of California, letter from	237
40	Otto Stuhlman, professor of physics, University of North Carolina, letter from	237
41	W. G. Leutner, president, Western Reserve University, letter from	238
42	W. G. Leutner, letter to, from H. M. Kilgore	238
43	W. G. Leutner, letter from	239
44	W. G. Leutner, letter to, from H. M. Kilgore	239
45	David M. Dennison, professor of physics, University of Michigan, letter from	239
46	Charles H. Wesley, president, Wilberforce University, letter from	240

Digitized by Google

No.	Exhibit	Appears on page
47	J. Nelson Norwood, president, Alfred University, letter from	240
48	A. R. Ellis, president, American Council of Commercial Laboratories, letter from	241
49	A. R. Ellis, letter to, from H. M. Kilgore	241
50	I. M. Kolthoff, professor and head, Division of Analytical Chemistry, University of Minnesota, letter from	242
51	I. M. Kolthoff, letter to, from H. M. Kilgore	243
52	W. E. Beall, vice president, Engineering, Boeing Aircraft Co., letter from	244
53	W. E. Beall, letter to, from H. M. Kilgore	245
54	Robert C. Cook, American Genetic Association, Washington, D. C., letter from	245
55	American Genetic Association, statement by	247
56	Francis C. Frary, Oakmont, Pa., letter from	249
57	H. W. Pleister, president, Diamond Expansion Bolt Co., Inc., Garwood, N. J., letter from	249
58	H. W. Pleister, letter to, from H. M. Kilgore	250
59	Edsel Ford, president, Ford Motor Co., letter from	250
60	Edsel Ford, letter to, from H. M. Kilgore	250
61	W. P. Putnam, president, Detroit Testing Laboratory, letter from	251
62	John Adams Comstock, associate director, Sciecne, Los Angeles County Museum, letter from	251
63	J. H. Simons, Pennsylvania State College, letter from	252
64	J. H. Simons, article by, Research In Wartime, from Science	254
65	J. H. Simons, letter to, from H. M. Kilgore	256
66	R. J. Riggs, Standolind Oil and Gas Co., Tulsa, Okla., letter from	257
67	R. J. Riggs, letter to, from H. M. Kilgore	257
68	Edwin G. Boring, director of the psychological laboratory, Harvard University, letter from	258
69	Edwin G. Boring, letter to, from H. M. Kilgore	258
70	H. Eliot Kaplan, executive secretary, National Civil Service League, letter from	259
71	V. Bush, director, Office of Scientific Research and Development, letter from	259
72	F. S. Gordon, statement, Office of Scientific Research and Development and related organizations	263
73	Executive order establishing Office of Scientific Research and Development	268
74	J. D. Quist, Detroit, Mich., letter from	271
75	J. D. Quist, letter to, from H. M. Kilgore	271
76	Milton Orchin, Pittsburgh, Pa., letter from	271
77	Milton Orchin, letter to, from H. M. Kilgore	272
78	Oliver Johnson, Ames, Iowa, letter from	272
79	Oliver Johnson, letter to, from H. M. Kilgore	272
80	R. F. Poole, president, Clemson Agricultural College, letter from	273
81	Robert Emerson, assistant professor of biophysics, California Institute of Technology, letter from	273
82	Robert Emerson, letter to, from H. M. Kilgore	274
83	Charles E. Schofield, president, Southwestern College, letter from	275
84	Felix Morley, president, Haverford College, letter from	275
85	Atherton Seidell, Friends of the Army Medical Library, Washington, D. C., letter from	276
86	Paul R. Heyl, Washington, D. C., letter from	276
87	Melville J. Herskovits, Northwestern University, letter from	277
88	Carl L. Hubbs, professor of zoology, University of Michigan, letter from	277
89	A. Franklin Shull, professor of zoology, University of Michigan, letter from	278
90	Oscar K. Rice, associate professor of chemistry, University of North Carolina, letter from	279
91	Oscar K. Rice, letter to, from H. M. Kilgore	279

Digitized by Google

No.	Exhibit	Appears on page
92	Stanley B. Niles, president, Iowa Wesleyan College, letter from	280
93	H. E. Jaques, Mount Pleasant, Iowa, letter to Stanley B. Niles	280
94	Louis C. Karpinski, professor of mathematics, University of Michigan, letter from	281
95	Louis C. Karpinski, resolution submitted by, to the American Council of Learned Societies	281
96	Louis C. Karpinski, letter from	283
97	Preston Edwards, Sweet Briar College, letter from	284
98	F. L. Aurin, president, American Association of Petroleum Geologists, Inc., letter from	284
99	Don M. Yost, professor of inorganic chemistry, California Institute of Technology, letter from	286
100	R. W. Gallagher, president, Standard Oil Co., New York, N. Y., letter from	286
101	S. L. Stolte, secretary, Minnesota Association of Professional Engineers, letter from	287
102	J. Harry Philbin, Baltimore, Md., letter from	287
103	Garland Peyton, director, division of mines, Atlanta, Ga., letter from	288
104	H. L. Bolley, botanist and plant pathologist, Fargo, N. Dak., letter from	289
105	John J. Foley, general manager, the Chemical Foundation, Inc., New York, N. Y., letter from	289
106	Robert G. Aitken, Director Emeritus, Lick Observatory, Berkeley, Calif., letter from	290
107	George W. McAlpin, president, West Virginia Section, American Society of Civil Engineers, letter from	290
108	Frank E. Rice, Evaporated Milk Association, Chicago, Ill., letter from	290
109	Elmer J. Mather, National Dairy Products Corporation, New York, N. Y., letter from, and prepared statement	291
110	R. T. L. Liston, president, King College, letter from	294
111	Robert Matthews, Charleston, W. Va., letter from	294
112	Grover C. Dillman, president, Michigan College of Mining and Technology, letter from	294
113	W. J. Hester, secretary, University of Miami, letter from	295
114	Charles C. Miltner, president, University of Portland, letter from	295
115	W. Spraragen, Welding Research Committee of the Engineering Foundation, New York, N. Y., letter from	295
116	W. W. Haggard, president, Western Washington College of Education, letter from	296
117	H. S. Osgood, chairman, department of chemistry, Westminster College, letter from	296
118	L. B. Arguimbau, secretary, Boston-Cambridge Branch, American Association of Scientific Workers, letter from	296
119	W. G. Crichton, Johnstown Coal & Coke Co., Charleston, W. Va., letter from	297
120	A. E. Douglas, University of Arizona, letter from	297
121	Synthetic Rubber Report, proposals of the International Federation of Architects, Engineers, Chemists, and Technicians	297
122	Elmer M. Jones, Denison University Research Foundation, letter from	306
123	A. F. Whitney, president, Brotherhood of Railroad Trainmen, letter from and enclosures	307
124	Robert E. Elliott, Chemical Arts Forum, letter from	308
125	Robert E. Elliott, letter to, from H. M. Kilgore	309
126	National Association of Manufacturers, pamphlet, Shall Research Be Socialized?	309
127	The Science Mobilization Bill, article by H. M. Kilgore, Science, Aug. 13, 1943	312

Digitized by Google

No.	Exhibit	Appears on page
47	J. Nelson Norwood, president, Alfred University, letter from	240
48	A. R. Ellis, president, American Council of Commercial Laboratories, letter from	241
49	A. R. Ellis, letter to, from H. M. Kilgore	241
50	I. M. Kolthoff, professor and head, Division of Analytical Chemistry, University of Minnesota, letter from	242
51	I. M. Kolthoff, letter to, from H. M. Kilgore	243
52	W. E. Beall, vice president, Engineering, Boeing Aircraft Co., letter from	244
53	W. E. Beall, letter to, from H. M. Kilgore	245
54	Robert C. Cook, American Genetic Association, Washington, D. C., letter from	245
55	American Genetic Association, statement by	247
56	Francis C. Frary, Oakmont, Pa., letter from	249
57	H. W. Pleister, president, Diamond Expansion Bolt Co., Inc., Garwood, N. J., letter from	249
58	H. W. Pleister, letter to, from H. M. Kilgore	250
59	Edsel Ford, president, Ford Motor Co., letter from	250
60	Edsel Ford, letter to, from H. M. Kilgore	250
61	W. P. Putnam, president, Detroit Testing Laboratory, letter from	251
62	John Adams Comstock, associate director, Sciecne, Los Angeles County Museum, letter from	251
63	J. H. Simons, Pennsylvania State College, letter from	252
64	J. H. Simons, article by, Research In Wartime, from Science	254
65	J. H. Simons, letter to, from H. M. Kilgore	256
66	R. J. Riggs, Standolind Oil and Gas Co., Tulsa, Okla., letter from	257
67	R. J. Riggs, letter to, from H. M. Kilgore	257
68	Edwin G. Boring, director of the psychological laboratory, Harvard University, letter from	258
69	Edwin G. Boring, letter to, from H. M. Kilgore	258
70	H. Eliot Kaplan, executive secretary, National Civil Service League, letter from	259
71	V. Bush, director, Office of Scientific Research and Development, letter from	259
72	F. S. Gordon, statement, Office of Scientific Research and Development and related organizations	263
73	Executive order establishing Office of Scientific Research and Development	268
74	J. D. Quist, Detroit, Mich., letter from	271
75	J. D. Quist, letter to, from H. M. Kilgore	271
76	Milton Orchin, Pittsburgh, Pa., letter from	271
77	Milton Orchin, letter to, from H. M. Kilgore	272
78	Oliver Johnson, Ames, Iowa, letter from	272
79	Oliver Johnson, letter to, from H. M. Kilgore	272
80	R. F. Poole, president, Clemson Agricultural College, letter from	273
81	Robert Emerson, assistant professor of biophysics, California Institute of Technology, letter from	273
82	Robert Emerson, letter to, from H. M. Kilgore	274
83	Charles E. Schofield, president, Southwestern College, letter from	275
84	Felix Morley, president, Haverford College, letter from	275
85	Atherton Seidell, Friends of the Army Medical Library, Washington, D. C., letter from	276
86	Paul R. Heyl, Washington, D. C., letter from	276
87	Melville J. Herskovits, Northwestern University, letter from	277
88	Carl L. Hubbs, professor of zoology, University of Michigan, letter from	277
89	A. Franklin Shull, professor of zoology, University of Michigan, letter from	278
90	Oscar K. Rice, associate professor of chemistry, University of North Carolina, letter from	279
91	Oscar K. Rice, letter to, from H. M. Kilgore	279

Digitized by Google

No.	Exhibit	Appears on page
92	Stanley B. Niles, president, Iowa Wesleyan College, letter from	280
93	H. E. Jaques, Mount Pleasant, Iowa, letter to Stanley B. Niles	280
94	Louis C. Karpinski, professor of mathematics, University of Michigan, letter from	281
95	Louis C. Karpinski, resolution submitted by, to the American Council of Learned Societies	281
96	Louis C. Karpinski, letter from	283
97	Preston Edwards, Sweet Briar College, letter from	284
98	F. L. Aurin, president, American Association of Petroleum Geologists, Inc., letter from	284
99	Don M. Yost, professor of inorganic chemistry, California Institute of Technology, letter from	286
100	R. W. Gallagher, president, Standard Oil Co., New York, N. Y., letter from	286
101	S. L. Stolte, secretary, Minnesota Association of Professional Engineers, letter from	287
102	J. Harry Philbin, Baltimore, Md., letter from	287
103	Garland Peyton, director, division of mines, Atlanta, Ga., letter from	288
104	H. L. Bolley, botanist and plant pathologist, Fargo, N. Dak., letter from	289
105	John J. Foley, general manager, the Chemical Foundation, Inc., New York, N. Y., letter from	289
106	Robert G. Aitken, Director Emeritus, Lick Observatory, Berkeley, Calif., letter from	290
107	George W. McAlpin, president, West Virginia Section, American Society of Civil Engineers, letter from	290
108	Frank E. Rice, Evaporated Milk Association, Chicago, Ill., letter from	290
109	Elmer J. Mather, National Dairy Products Corporation, New York, N. Y., letter from, and prepared statement	291
110	R. T. L. Liston, president, King College, letter from	294
111	Robert Matthews, Charleston, W. Va., letter from	294
112	Grover C. Dillman, president, Michigan College of Mining and Technology, letter from	294
113	W. J. Hester, secretary, University of Miami, letter from	295
114	Charles C. Miltner, president, University of Portland, letter from	295
115	W. Spraragen, Welding Research Committee of the Engineering Foundation, New York, N. Y., letter from	295
116	W. W. Haggard, president, Western Washington College of Education, letter from	296
117	H. S. Osgood, chairman, department of chemistry, Westminster College, letter from	296
118	L. B. Arguimbau, secretary, Boston-Cambridge Branch, American Association of Scientific Workers, letter from	296
119	W. G. Crichton, Johnstown Coal & Coke Co., Charleston, W. Va., letter from	297
120	A. E. Douglas, University of Arizona, letter from	297
121	Synthetic Rubber Report, proposals of the International Federation of Architects, Engineers, Chemists, and Technicians	297
122	Elmer M. Jones, Denison University Research Foundation, letter from	306
123	A. F. Whitney, president, Brotherhood of Railroad Trainmen, letter from and enclosures	307
124	Robert E. Elliott, Chemical Arts Forum, letter from	308
125	Robert E. Elliott, letter to, from H. M. Kilgore	309
126	National Association of Manufacturers, pamphlet, Shall Research Be Socialized?	309
127	The Science Mobilization Bill, article by H. M. Kilgore, Science, Aug. 13, 1943	312

Digitized by Google

ALPHABETICAL LIST OF AUTHORS OF EXHIBITS

	Page
Aitken, Robert G	290
Alexander, Jerome	230
Allport, Gordon W	234
Arguimbau, L. B	296
Aurin, F. L	284
Beall, W. E	244
Bolley, H. L	289
Boring, Edwin G	258
Brown, E. J	231
Bush, V	259
Comstock, John Adams	251
Cook, Robert C	245
Crichton, W. G	297
Dennison, David M	239
Dillman, Grover C	294
Douglas, A. E	297
Dresden, Arnold	236
Edwards, Preston	284
Emerson, Robert	273
Elliott, Robert E	308
Ellis, A. R	241
Farnsworth, Paul R	234
Foley, John J	289
Ford, Edsel	250
Frary, Francis C	249
Gallagher, R. W	286
Gordon, F. S	263
Haggard, W. W	296
Heilbrunn, L. V	233
Herskovits, Melville J	277
Hester, W. J	295
Heyl, Paul R	276
Holmes, S. J	237
Hubbs, Carl L	277
Imrie, Herbert D	230
Jaques, H. E	280
Johnson, Oliver	272
Jones, Elmer M	306
Kaplan, H. Eliot	259
Karpinski, Louis C	281
Kolthoff, I. M	242
Leutner, W. G	238
Liston, R. T. L	294
McAlpin, George	290
McDonald, Wilson J	232
Mather, Elmer J	291
Matthews, Robert	294
Miltner, Charles C	295
Morley, Felix	275
Nau, Carlton	213
Niles, Stanley B	280
Norwood, J. Nelson	240
Orchin, Milton	271
Osgood, H. S	296
Peyton, Garland	288
Philbin, J. Harry	287
Pincus, Gregory	235
Pleister, H. W	249
Poole, R. F	273
Putnam, W. P	251
Quist, J. D	271
Rice, Frank E	290
Rice, Oscar K	279
Riggs, R. J	257
Sachs, Albert Parsons	217

Digitized by Google

	Page
Schofield, Charles E	275
Seaton, M. Y	227
Seidell, Atherton	276
Shull, A. Franklin	278
Simons, J. H	252
Spraragen, W	295
Stolte, S. L	287
Stuhlman, Otto	237
Thorogood, B. K	227
Visscher, J. Paul	233
Wesley, Charles H	240
Whitney, A. F	307
Yost, Don M	286

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, JUNE 17, 1943

UNITED STATES SENATE,
SUBCOMMITTEE ON WAR MOBILIZATION OF THE
COMMITTEE ON MILITARY AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 10:30 a. m., in room 104–B, Senate Office Building, Senator Edwin C. Johnson (acting chairman) presiding.

Present: Senator Johnson (acting chairman).

Also present: Henry H. Collins, Jr., and Herbert Schimmel, of the committee staff.

Senator JOHNSON. The committee will come to order.

The other members of the subcommittee are not able to be present today, but the record will be available for all of them.

Mr. Nau, will you give the reporter your name and position and then proceed with your statement.

STATEMENT OF CARLTON NAU, SECRETARY-MANAGER, AMERICAN PUBLIC POWER ASSOCIATION

Mr. NAU. My name is Carlton Nau, secretary-manager of the American Public Power Association.

I have here a prepared statement, which I would like to read and submit for the record, setting forth my interest in the proposed legislation and why I think it is beneficial to our people.

Senator JOHNSON. Proceed as you like.

Mr. NAU. My interest in the Science mobilization bill, S. 702, inheres in my position as secretary-manager of the American Public Power Association, a cooperative organization of publicly owned electric systems. Perhaps no group is in greater need of technological assistance and advice than the scattered municipal engineers and those other officers who have the handling of municipal and other publicly owned electric power projects all over the country.

The American Public Power Association is a nonprofit corporation, nonpolitical and nonpartisan, designed to provide management services to its members, and to act as a central clearing house for the exchange of information. We are on a war basis now, and our services are more needed than ever in a period of a shortage of power for war industries, labor shortages, hotel and travel restrictions.

The general purposes of the association are:

To promote cooperation and the exchange of information among members.

Digitized by Google

To promote mutual improvements and advance the common purpose of its members.

To supplement local services for members with particular regard to problems in the fields of (1) management, education, and personnel training; (2) engineering design, construction, operation, and research—I may pause a minute and add there that section (2) is the one in which we are particularly interested, particularly in its relationship to S. 702; I will elaborate on that further on in my statement—(3) accounting and commercial practices; (4) legal policy; and such other problems as may be common to, or of general interest to, public power systems.

There are about 3,000 municipal or State power projects, of which about 1,000 generate their own power and 2,000 buy power from private and other sources. Very few of these public power organizations have any research facilities. While they are in the same business as privately owned systems, their lack of national organization and restrictive limitations in their creation have resulted in an almost complete lack of facilities for research and scientific study of problems in the field. Furthermore, results of such studies on the part of private groups such as the Edison Electric Institute are not generally available to public power systems. The average publicly owned system serves a town of 10,000 or 12,000 people, and it is pretty evident that only larger systems can afford to engage in research.

It is very clear, then, why certain portions of S. 702 carry a special appeal to me as an officer of the American Public Power Association. Paragraphs (5) and (6) of section 1 would be a great benefit to publicly owned power projects—

(5) to promote the full and speedy introduction of the advanced and effective techniques—for the benefit of agriculture, manufacturing, distribution, transportation, communication, and other phases of productive activity; for economical and efficient Federal, State, and local government * * *;

(6) to aid, encourage, and protect the research and enterprise of inventors, scientists, technicians, scientific and educational institutions, research laboratories and Government establishments engaged in scientific and technical work, and to make their resultant discoveries more readily available, and without discrimination, to all sections of industry, agriculture, and the public, in order to aid the war effort at the present time and in order to promote full employment and higher standards of living after the war.

A great deal has been said in the testimony before this committee about its potential aid to small business. I have read with much interest what Mr. Finley Tynes, of the Staunton Chamber of Commerce has had to say. Like aid could be given to the small and large "businesses" represented by publicly owned power projects. Municipally owned power plants and systems, while not engaged in a strictly governmental function, are political subdivisions of State government. Other sections of city government have access to the results of study and research of State or National agencies, both public and private, in such fields as health, police, fire, gas, and water. For example, there is an American Water Works Association and the American Gas Association. But, strangely enough, public power systems up until recently had no national association and were consistently opposed by those interests dominating electrical engineering research in State universities and colleges. A careful review of the Federal Trade Commission reports of 1934 on utility corporations will reveal, in part at least, the extent to which State research agen-

Digitized by Google

cies and even individual college professors were influenced by the vast and sometimes subtle powers of the electric utility industry.

Squeezing out water from stock structures and elimination of the holding company evil are only part of the accomplishments when a municipality acquires its own system. There still remain unseen obstacles, such as the monopoly control over research, patents, and processes. Here, then, is where this proposed legislation can make available to the average consumer of electricity the benefits of free and independent research and the advantages of technological progress which, if the experience of the last war is any guide, will be greatly accelerated by the war and in the immediate post-war period. Experts admit we are only on the threshold of the "electric age." That age can be made to serve man to its fullest extent only if "free enterprise," in its original and true meaning, is made to work.

By way of further explanation of this point, let me continue: The American Institute of Electrical Engineers is a national organization made up for the most part of men employed by the large electrical companies. Problems are parceled out to committees to be worked out within the framework permitted by the large interests. There is a committee on meter construction, a committee on transformers, and so on. There is a full list of them in the Yearbook of the American Institute of Electrical Engineers. Too frequently research and design on electrical equipment is not based on economy of materials or performance, but on the protection of capital already invested and on the principle of protecting patents.

These committees appear to be dominated by two groups: the manufacturers and the large utility holding company groups. Within the committees, technological information is in the hands of the large manufacturers who do technological work for the utilities. The use of technology, in turn, is dominated by the utility groups, who see to it that any considerable advances are promptly chloroformed if they represent any threat to patent control or to the financial structure of the big utility groups.

The principle of the fluorescent lamp is not new. Yet it was kept off the market for years because it would cut power bills by something like 50 percent. The utility companies, who get a major portion of their net revenues from residential consumers, vigorously opposed the introduction of the lamp and, in effect, agreed with the manufacturers that the illuminating qualities would be stressed in advertising—even though the high lighting levels were not required—and no mention would be made of the saving on the power bill. This, along with an organized program to discourage its public acceptance, kept from the consumer a highly efficient and far more economical light. That the public took to this lamp is indicated by a statement from one company to the effect that the fluorescent lighting industry reached the $100,000,000 mark faster than any of our great mass production industries. It required 15 years for automobiles and 5 years for radio to reach this volume.

Mr. Thurman Arnold has already given full details on the fluorescent matter in part 1 of your hearings.

In the face of influences long established in the field, the municipal engineer is an isolated individual. There is no force of group organization to put him on committees, no force to give him a hearing,

Digitized by Google

no machinery to lend weight to his needs and his views. The American Public Power Association is attempting to fill this gap, but it is a young organization, barely a year old, just getting started on the big job ahead. It is going to need all the help it can get, by way of research, by way of advice and counsel, by way of the dissemination of information, by way of introducing new devices in order to get them into manufacture—if necessary against the will of the Power Trust—for the public use and the public good.

Building codes, electrical safety codes, and specifications for equipment and materials sometimes are influenced by a particular group or a particular manufacturer. The most serviceable equipment for the least amount of money is not always the goal. With an impartial, independent research agency, such as this bill contemplates, making the results of its studies available in the public interest, those positive forces of competition would see to it that inefficient methods of production were not perpetuated because of corporate greed. We need a disinterested body working for the public safety and public economy to investigate and periodically revise the safety codes.

Nobody can reasonably oppose scientific and technical research which is made available to everyone. Such public study and research will introduce an element of competition with those private agencies and will inevitably result in greater technological advances and improvements all along the line. Experience has proven this time and again. The application of the cooperative technique to rural electrification has demonstrated this well. The private agencies fight to maintain their domination of the particular field, but when others get interested and do something about it, the forced change is beneficial to every one. Rather than doing harm, it is a stimulating influence.

Information coming out of Axis countries indicates they have completely mobilized their scientific and technical resources. Total war demands that we do the same if we are to match the war machine of our enemies.

I would be glad, Senator, to answer any questions that you may have.

Senator JOHNSON. Thank you, Mr. Nau.

I have been handed a list of eight questions by another member of the committee, who was not able to be present this morning, and I would be very glad to submit them to you.

The first question is: Can you provide for the record a brief history of the development of municipal power projects in this country?

Mr. NAU. Yes; I can supply that information, and by way of comment here I would like to point out that municipal power projects are not new. Many people in the country have gotten the idea that public power is strictly New Dealish; that it is something new. On the contrary, my report, which I will be glad to prepare, will show that the first municipal power plant was established in Pennsylvania in 1881; and that at the time of Edison's Pearl Street station, if my memory serves me right, there were seven privately owned systems and one publicly owned system operating. Others were established, for example, at McMinnville, Oreg., as early as 1889.

So that very clearly these municipal power plants are one of the early establishments in our country, indicating that people in the cities and towns felt it desirable, even at that early period, to own and operate their own systems for their benefit.

Digitized by Google

I shall be glad to prepare further information on that for the record.

Senator JOHNSON. We will be very glad to have it.

(The material referred to was marked "Exhibit No. 17" and appears on p. 213.)

Senator JOHNSON. The second question: Approximately how many people are serviced by the 3,000 municipal and State power projects?

Mr. NAU. The municipal plants range in size all the way from, for example, the city of Los Angeles, which last year grossed more than $30,000,000, down to the town of Princeton, Maine, which serves about 500 customers.

While it is true that the larger part of the municipal power systems serve in the smaller towns, Colorado Springs, I believe, has a municipally owned power plant——

Senator JOHNSON (interposing). Yes; and a very successful one; it has been operating for a great many years.

Mr. NAU. I think Mr. Mosely is very proud of the extent to which he has been able to turn some excess profits back into other civic functions.

Senator JOHNSON. Yes; they take care of the tax bill for that municipality to a considerable extent. They not only give very splendid and adequate service in every way, not only keep their plant up to 100-percent efficiency, but they give great assistance to the municipality in taking care of its other obligations.

Mr. NAU. And I think they are making a major contribution to the war now in serving Camp Carson.

Senator JOHNSON. Yes; Camp Carson and an aerial school, as well as an important war industry serving the production of airplanes.

Mr. NAU. While it is true that the larger number of the municipal systems are in smaller towns, we have municipal systems in such cities as Los Angeles, Seattle, Lansing, Mich.; Kansas City, Kans.; Springfield, Ill.; Tacoma; Memphis; and so forth.

As to the specific number of consumers, I doubt whether any up-to-date study has been made to determine the numerical factor there. The latest figures available are for 1937 and are contained in the Census of Electrical Industries prepared by the Bureau of the Census, Department of Commerce. That report shows that in 1937 municipal electric establishments supplied electricity to 2,656,958 customers, and Federal and State projects served 8,473. This would give a total number of customers of 2,665,431. Private companies served the same year 24,432,724 customers. By estimating growth during the last 6 years on the same basis as that shown in the decade prior to 1937, we would get a very rough approximation of 3,000,000 customers served today by municipal, State, and Federal projects. The figures for State and Federal projects are not given separately, so they are included in the calculation, though they are quite small in proportion to the whole and not asked for in the question.

The 3,000,000 figure is customers or meters and not the total number of people receiving the benefits of electric service.

Senator JOHNSON. You have already answered question No. 3: Do these projects cover only the small cities or towns?

The fourth question: Would you explain where the 2,000 projects you mentioned in your statement purchase their power, that is, the 2,000 which do not produce their own power but purchase it?

Mr. NAU. By and large, I imagine the figures would indicate that they buy power from existing private systems, principally, I think,

Digitized by Google

because of the history of the development of the municipal plants. Most of the municipal plants were taken over and purchased from the existing companies, and at the time they saw fit to continue their relationships with the company through a wholesale power contract, in most instances, rather than to install their own generating facilities. So I think that it could safely be said that they do buy primarily from private companies, although a substantial and increasing number of them buy from public systems such as the T. V. A.

As you know, the Tennessee distributors who are buying power wholesale from the T. V. A. are very numerous, there are several hundred of them.

You have the same set-up in the Pacific Northwest, where Bonneville is generating and transmitting power but these public agencies distribute it.

You have that same pattern developing in the Southwest with respect to the Brazos River system and the Dennison Dam, and it is developing in connection with the Santee-Cooper project in South Carolina. There again the public systems, such as municipalities, will buy their power wholesale from Santee-Cooper. And there are instances where small towns are even now buying power from R. E. A.-financed cooperatives, particularly where those cooperatives have their own generating facilities. That is true, I know, in Wisconsin, where they have two fairly large generating plants tied together and feeding over into Iowa.

I think that answers your question on that point.

Senator JOHNSON. It is also true that private distributing agencies purchase publicly produced power?

Mr. NAU. Oh, yes; that is quite true in all those instances that I have mentioned—in T. V. A., Bonneville, and Santee-Cooper, and down in the Southwest.

Senator JOHNSON. Now the fifth question: What influence have the public-power projects had in forcing the private utilities to lower their rates; and the second part of that question is: How is this done?

Mr. NAU. While the private companies have recently, in a Nation-wide advertising campaign, taken great credit for a continual rate-reduction program over the past number of years, the experience has been that that has been brought about primarily through the introduction of the element of competition, competition either by large Federal agencies such as T. V. A.; States agencies such as the Nebraska Public Power System, the Lower Colorado River Authority, or the Grand River Dam Authority; or local agencies such as power districts, public utility districts, municipalities, and electric cooperatives.

Applying that question to municipalities, I think it may be explained in this fashion: When a municipal power plant either constructs or takes over a system, it is immediately in a position to charge rates much more in line with the expenses involved in the production and distribution of the electric energy. There is no need to pay heavily for services from holding companies as might have prevailed in the earlier set-up; and while they are sometimes required, as we have indicated, to plow back funds into other civic functions, yet, by and large, because of the elimination of the watered stock, because of lower salaries all along the line, and other factors, they are generally able to serve their people at a lower cost.

Digitized by Google

There is some difference of opinion in municipal operations. The Canadians generally follow the teachings of Sir Adam Beck, and made it a policy not to allocate profits from the electric systems into other civic functions. We have in this country pretty much followed the English system, and have in many instances plowed back these funds to the point where some municipalities will point out the fact that they have no taxes or very few taxes.

There is a great deal of debate as to the relative merits of the two principles, but the fact remains that with reasonably fair wholesale rates where they do buy power, municipal systems can serve their people well. I have statistics, charts, and graphs in my office to show that the average municipal bill is lower than the average private company bill. I can give you any additional information you want on that.

With respect to the cooperative angle, I believe Mr. Clyde Ellis of the N. R. E. C. has testified on that point, but I may add that while a substantial number of them do buy power from private systems, they have been able so far, in a number of instances, to buy power wholesale and distribute it to their members at rates lower than the company selling them power charges its own customers elsewhere in the community.

There is a case in Arkansas now revolving around that very principle and it is possible because of the favorable terms of the loan, because of the R. E. A. technique of mass building and group purchasing which cuts down costs to the point where rural lines are built for some $800 or $850 a mile instead of $1,500 to $2,200, as was the case when R. E. A. started.

With respect to the T. V. A., I think they may have appeared before the committee, but everyone is fairly familiar with the so-called yardstick application of the Tennessee Valley Authority in connection with the reduction of rates of existing suppliers everywhere.

That same parallel can be drawn in the Pacific Northwest.

The problem in power supply and costs isn't essentially one of generation and transmission. It has primarily been a distribution problem, and I think that is being solved by the experience of the municipalities and the cooperatives; that is, indicating the extent to which they can take power and distribute it to their people at low rates.

But essentially it all boils down to an element of bringing in the aspect of competition into what otherwise is both a natural and legal monopoly. I mean competition in the immediate neighborhood, not competition with respect to consumers in the city, although there are probably some 200 different municipal plants in the country that have competing systems—for example, the city of Seattle and the city of Springfield, Ill., competing systems which are, as both sides will admit, uneconomical and where there should be one system to cover all.

I think that answers your question on the point of reducing rates.

Mr. COLLINS. You mean they compete with the private utility in the same city?

Mr. NAU. That is right.

Senator JOHNSON. Going back to the State of Colorado, we have municipally owned power plants in several of our little cities. Fort Morgan, Colo., not only advertises a better service but they claim to be the best lighted town in all of Colorado, and they also boast that there are no municipal taxes in Fort Morgan. That has caused the question

Digitized by Google

to come up in other Colorado cities. A bond issue is proposed to take over the power plant for a municipality, and rather a bitter contest is held, a bitter debate preceding the election; and I have noticed that, even though the municipality power proposal loses, it usually results in lower rates; that is, during the campaign the privately owned power plant agrees to furnish energy at a lower rate, or, even where an election is threatened, prior to the election the rates will be very suddenly reduced. As far as Colorado is concerned, that is how rates are reduced.

Mr. NAU. Tampa, Fla., just recently had a session of that nature. They have been petitioning for years for lower rates. Nothing happened, and finally they got together and had some meetings to discuss the acquisition of the system, and immediately the Tampa Electric Co. made rather substantial reductions, which met the immediate demands of the people, and it has simmered over now. But that process continues to the point where either they get the rate they want or they take over the system.

Senator JOHNSON. I was told that there is a case in Canada where a privately owned power plant showed that they could operate with lower rates than publicly owned power distributors. It would seem to me that there would be no question but what a privately owned power plant and distributing system could compete with any publicly owned plant that you could bring into existence, except that they just don't do it.

Mr. NAU. The principles of operation are the same; it is strictly a question of return and ownership.

Senator JOHNSON. There is nothing magic about public operation.

Mr. NAU. Nothing at all.

Senator JOHNSON. In fact, the handicap is the other way.

Mr. NAU. That is one of the things that is a current pre-bond-issue election topic, the ability of the people themselves to own and operate the systems. It was the story used against the R. E. A. electric cooperatives—that the farmers just didn't know enough, weren't intelligent enough, to understand and manage their own affairs with respect to the distribution of electric energy.

But the question of rates, I think, is the critical factor. If a company is not overburdened in its stock structure, has good operating personnel, and its plant is reasonably new and modern, they can do a good job, there is no question about it. But the fact that you have so many public systems coming into being indicates that in many, many cases the job has not been done, rate reductions have not come along as they should have in proportion to the technological advances, and you have the people turning to their own systems.

That ties right in, if I may add, Senator, with this bill, because the municipalities, by and large, do not have research facilities to help them in these problems. I would imagine that there are less than a hundred cities that have any research or study facilities at all with respect to the problems they meet in the operation of their plants.

Senator JOHNSON. The sixth question: Would you describe some of the techniques and forces which have impeded public power development? You have partially answered that question already.

Mr. NAU. If we counted all the cooperatives and all the new power projects publicly owned, you would have a ratio of something like 80

Digitized by Google

percent privately owned and 20 percent publicly owned in the whole Nation.

Naturally, the operators of the 80 percent are interested in maintaining their position in the field. That is perfectly understandable. To my knowledge, they haven't missed a trick in their efforts to maintain that position, to the point of completely negating and controverting the will of the people, through injunctions, through court processes, through delay. For example, in Geneseo, Ill., they have had a case pending for the last 8 years, which has been appealed and reappealed from the court to the Commissions, and back and forth, circumventing the will of the people to buy out the competing system. Geneseo has been stopped until recently—as a matter of fact, the Commission has just issued an order saying, in effect, that the people may acquire the system. The power company now contends that that is not mandatory, and will fight the order of the Public Service Commission of Illinois, probably through the courts again.

But in addition to such opposition as that, of course, we have the whole range—with which I think the subcommittee is familiar—of opposition tactics that are a matter of common knowledge throughout the country, at least common knowledge on the part of people who are interested at all in the social and economic aspects of cheap electric power.

Unquestionably there are other instances where these municipal plants and the people involved do not have access to the technological improvements that take place in the industry, and there again I think that making available and bringing into play the competitive forces with respect to patent rights that this bill would do, would have a very beneficial effect on municipal operation and on any other public power operation.

There are unseen methods of opposition. Others here recited the case of the cyclometer meter. Also mentioned very briefly was the matter of transformers and their price.

The rate base is founded upon plant investment. Of course, if that plant investment is high you can charge a high rate, particularly if your regulation provides for a fixed percentage.

Too frequently we have gone into equipment, material, and instruments that, I feel, could be made to cost less—at least that has been our experience in R. E. A.—and could be made to serve the needs without the quantity of material or the price attached to them. I know that was true of the meter and the transformer at R. E. A. It was true of the whole line itself, as was indicated by the record there.

Senator JOHNSON. Could you give the background and explanation of the public power situation in Omaha?

Mr. NAU. That is another indication of the extent to which the power-company operators—in this case the Nebraska Power Co.—have gone to oppose the application of the Public Utility Holding Company Act of 1935, commonly called the "death sentence," and oppose the will of the people with respect to a determination as to whether or not they want to serve themselves with electric power.

Nebraska is the one State in the Union which has all publicly owned electric utilities, except the city of Omaha and five surrounding counties. That property is owned by the Nebraska Power Co., an affiliate, I believe, on up the line of Electric Bond & Share—these pyramids get

Digitized by Google

so complicated that I can't possibly remember them, I have a chart in the office that would indicate it, though—but that company, as I understand it, is required to divest itself of these properties, and there has been a move afoot in Nebraska on the part of the other publicly owned systems, the Nebraska Public Power System, the Loup River System and the Consumers, to effect legislation to acquire that in the interests of the people of Omaha.

As I understand the picture, the Nebraska Power Co. immediately proposed—and this again is common knowledge in Nebraska, although I don't think it has been outside—proposed the introduction of a bill, LB–204, to set up a Nebraska Power Authority, purportedly to be a public agency, with all the advantages and attributes of public ownership, to buy from the Nebraska Power Co. and operate the properties in Omaha and the surrounding counties.

The legislation was peculiar because it was identical with a bill proposed in the State of Colorado, with which I believe you may be familiar.

Senator JOHNSON. I am very familiar with the proposal there to take over the Public Service Co. There was quite a controversy in the Colorado Legislature and they have appointed a committee to investigate the whole matter

Mr. NAU. Getting back to the Nebraska case, the bill upon examination, on the part of public-power people and the public generally, was found to have some very serious drawbacks, if you were aiming for the benefits of public power. There was no limit on salaries, there was some question as to the provisions of the bill whereby the officials would be responsible to the will of the consumers and the people. It had an unusual provision in it, as I remember, providing for the mortgaging of public property, which is almost unknown in public financing.

Senator JOHNSON. And in Colorado the price to be paid for the privately owned company was not to be determined in the usual manner, they were going to take over this property at an excessive cost, which would have an immediate effect upon the rates.

Mr. NAU. That is right. Of course, they will do their best. In the Northwest the Puget Sound Power & Light has been demanding a terrific price for its properties up there.

Senator JOHNSON. In other words, in Colorado the proposal was for the State to take over the watered stock of the Public Service Co.

Mr. NAU. That is precisely it. But essentially what happened, then, in concluding the Nebraska case, LB–204 was finally passed, after much opposition, but amended substantially to knock out some of these more objectionable features.

Now, there is a rumor in Nebraska that the company may not exercise its permissive authority under this bill to sell the properties to the Authority, and the people of Omaha who looked forward to lower rates under operation by the Authority, are becoming disturbed as to whether it had any meaning or not.

That is the Omaha picture as accurately as I know it.

Senator JOHNSON. How, in your opinion, could the office proposed in S. 702 avoid what you refer to as the chloroforming of technological advances?

Mr. NAU. Well, I am a great believer in the positive forces of competition, and that goes for other industries even more so than the elec-

Digitized by Google

tric-power industry. By competition with respect to electric power, I mean competing agencies such as T. V. A. and the cooperatives and the municipals, which provide some measurement of performance.

As I say, I think many of the rate reductions that have taken place have been largely attributable to competition.

But if there were set up through S. 702 an Office of Scientific and Technical Mobilization, providing a means whereby the vast body of research, technical study, and progress that is now going on under Government auspices—for example, in the Bureau of Mines and under the various agricultural branches out through the States—in all fields of industry, if there were some means whereby you could bring into the stream of competition, without the restrictions that the present patent system sometimes imposes—that is, bring into the stream through the making available of these patents through this Office—you would introduce a very healthy element of competition. It would benefit the inventor, it would benefit the people, and it would have a very salutary effect in stimulating, as I have indicated, additional study and research to keep up with the progress being made in the field.

There was more rural electrification done on the part of the private companies as the result of the institution of the R. E. A. than they had done in many preceding years—sheerly because of the element of competition.

Senator JOHNSON. I agree completely with that statement. That has been my observation, also, just precisely the way you have stated it.

Mr. NAU. I think too frequently we have gotten to the point where the courts may almost be said to be policing our patent system, and perpetuating the restrictive control of patents, far beyond the original aims of the patent system.

I can see an opportunity in this bill for making many of these advances—we are in the age of technology now, technology is the very cornerstone of progress. I can see an opportunity for making technological advances more readily available to the public. A number of instances, I think, could be compiled at leisure in which old equipment has been kept on the market because of patent controls over newer devices which might have seriously affected the extent to which, for example, some company dominated the particular field.

Again, I think Mr. Arnold has pointed out the fight on this fluorecent light case which is definitely applicable to the power business and we are indebted to Mr. Arnold for his efforts. The Sylvania people, very aggressive in the beginning, ran into terrific obstacles, and I think now, even, are operating under assignment of patents from the General Electric Co.

I see a splendid opportunity in this legislation to go right down to grass-roots Government, namely, the people who are operating their own municipal systems, and provide for them something very essential to a good, efficient operation of electric power systems.

Senator JOHNSON. That concludes the group of questions submitted to me.

I would like to have you enlarge upon your statement just a little. You said:

"Experts admit we are only on the threshold of the 'electric age'. That age can be made to serve man to its fullest extent only if 'free enterprise', in its original and true meaning, is made to work."

Digitized by Google

I would like to have you enlarge upon that just a little. It seems contradictory on the face of it for one who is advocating public ownership also to be advocating free enterprise.

Mr. NAU. That is a very logical question, and I think it has a very sound answer. I was speaking there of free enterprise in its broad meaning. That is, the elements of competition coming into play so that we get the beneficial effects of competition, which is the foundation of our capitalistic system. But the elecric power indusry, as an industry, is in itself a monopoly, natural and legal, and I think it has been proven that the best possible service can be rendered under conditions where you have one agency serving the people.

When I spoke of competition in the electric power industry, I meant exposing a system to the influences of competition near enough geographically to have some effect. I didn't mean within-city competition such as in the city of Springfield, Illinois.

When I use the term "free enterprise" I mean to use it in its broad meaning.

Senator JOHNSON. What is its broad meaning? It only has one meaning to me, and that is neither broad nor narrow, it is fundamental, and I would like to know what you mean by its "broad meaning" and "narrow meaning."

Mr. NAU. I mean not particularly applied to the electric utility industry. This bill will be concerned with every aspect of industry, as I understand, and I see in it an opportunity to bring into play those elements of competition which are basic in our system of free enterprise. I mean price, quality, service, with all other elements, and delivery to the consumer the best possible materials and equipment at the lowest possible price.

Senator JOHNSON. Well, your answer is not very clear to me, as to exactly what you have in mind. But perhaps this question will clear up what I am trying to bring out:

Do you believe that if all distribution and production of electric energy was publicly owned, that that would be a good thing, or do you think that the fact that part of that is privately distributed and that it is all mixed up, that you bring in the element of competition and thereby get better services and better rates?

Mr. NAU. Regulation generally, as is a known fact, has been quite difficult. We have the State commissions that were set up under various authorities, with certain statutory powers to regulate and control the generation, transmission, and distribution of electric power. But in many instances that regulation has partially broken down to the point where the record will show that you have had an almost insignificant amount of rate reductions brought about by a State regulatory agency acting on its own motion.

Senator JOHNSON. I agree with that statement completely, but the point is, by having these yardsticks in both distribution and production, I don't think anyone can deny that it has resulted in lower rates.

Now, suppose you do not have the yardstick, suppose you have complete public ownership of distribution and production, then what about the service and what about the rates when you eliminate the element of competition? Would that or would it not be a good thing for the public?

Mr. NAU. It is strictly up to the people themselves. If you can maintain public interest in that function—for example, just as the

Digitized by Google

grain and feed cooperatives maintain consumer interest in their functions—which is conducive to good management, I think it can be done.

Senator JOHNSON. Yes, but they have competition, and very severe competition. When you remove the total element of competition from the picture, what is going to happen?

Mr. NAU. Of course, that is the case now. That explains my statement a while ago. In the city of Washington, you have a complete lack of competition in the generation, sale, and distribution of electric power.

Senator JOHNSON. But you have the threat, perhaps, of municipally owned or publicly owned power.

Mr. NAU. Yes, it is there; but there is no competition, as I think of competition in terms of, for example, the automobile industry.

Senator JOHNSON. No; it has to be a monopoly to a certain extent, of course, we realize that.

You don't have competition between A and B, both A and B being private institutions, but you do have competition between the threat of public ownership on the one hand, and private operation on the other.

Mr. NAU. My personal opinion is that, as evidenced by the city of Los Angeles and the type of service, rates and the management there, that if you have complete public ownership of electric facilities, and techniques whereby the interest and the will of the people can be maintained in the operation of those systems, and advantages for all the technological improvements that take place in the industry being made available to these public systems, I think you can have just as efficient operation, and in many cases more efficient operation, than you have under private management.

Senator JOHNSON. Well, there are a great many "ifs" in your answer.

Mr. NAU. Of course, you are dealing with human beings, Senator. But with the proper technical help to run their business, they can, as has been proven time and again, be very successful. Public power isn't anything that you have got to propagandize. It is a fact, as Mr. Dirksen said the other day in the House, "Public power is here to stay, it is like administrative law."

Senator JOHNSON. I agree with that statement, but maybe private power is here to stay, too. I hope it is, I hope you have the two of them operating side by side.

Mr. NAU. Well, side by side in terms of what we said a while ago; not side by side, for example, in one city.

Senator JOHNSON. No; I don't mean in one city, I mean city A having a private operation of power, and city B having a municipal operation—and in that way I think that the municipally operated power plant becomes a yardstick.

Mr. NAU. Don't you think eventually, then, you will have, through normal economic processes, a complete change of ownership, like that in water systems?

Senator JOHNSON. No; I don't think that, necessarily. I think that a private power plant, if it wanted to, could compete with a publicly owned power plant any time, any place.

Mr. NAU. I think there is an "if" there.

Dr. SCHIMMEL. Wouldn't you say if it had to, not if it wanted to?

Digitized by Google

Senator JOHNSON. Certainly, I am saying that it is possible, I am not saying that it would do it. And in the back of my head I remember that there is a company in Canada that has stayed through and competed with public ownership right along, and has made a profit and rendered fine service, and has met every condition of public ownership.

There is no magic in public ownership at all. You have to operate on the same economic principles and there just is no reason to believe that public ownership could be more efficient than private ownership.

I wouldn't take that position, perhaps, if I had not been confronted during the past several years with a Government monopoly known as the War Department. I know that the Ordnance Department has done exactly what private industry has done in holding back improved techniques, submerged them and kept them out of the picture—kept them from becoming effective, just as private industry has. So I don't have too much confidence in what public ownership will do if it is left to itself and if it doesn't have competition from private industry.

In other words, I am not a Socialist. I believe in public ownership to a certain extent; I think it is a fine thing. It has been a wonderful thing in Colorado. It has brought the rates down. But I would hate to see Colorado go all the way and drive out the private operation of power production and distribution. I like to see the dual system.

Mr. NAU. Of course, you have the same principles at play there that you have between the Federal and State Governments. I think your checks and balances are very real factors.

Senator JOHNSON. But that is getting quite a ways away from our bill.

Are there any other questions?

Mr. COLLINS. Can you describe some of the technological and research assistance that the public power systems could use?

Mr. NAU. There has been considerable controversy, for example, in street light design. When the incandescent system came in and superseded the arc system, for a long time the municipalities were buying arc systems, when a far more efficient and effective incandescent system was available. If at that time there had been available to these municipal engineers completely independent scientific data with respect to the most effective, economical street lighting system then on the market, not what any particular manufacturer had to sell, I think it would have been highly beneficial.

Mr. COLLINS. There is no place that they can go now for a central clearing house on new techniques?

Mr. NAU. That is what we contemplate after our association comes of age. We expect to appoint various committees to conduct research on these various technical problems, and make that research available to our people. That is a long way in the future, but we are aiming in that direction.

Mr. COLLINS. Have you another example?

Mr. NAU. As a result of the speeding up of technological processes during the war, I visualize a tremendous increase in new applications of electric power. For example, dehydrating equipment on the farm. Unquestionably much of that equipment will save energy when compared with the old equipment. I would hate to see it kept off the

Digitized by Google

market simply because it used, say, 50 percent less current than older equipment.

Mr. COLLINS. You spoke in your statement about the apparent domination by certain corporations of the American Institute of Electrical Engineers. Can you make that more specific, or can you supply the committee with any evidence of that?

Mr. NAU. I think I could give you more detailed information as to the different committees and who is the head of them and their affiliations, if you would like to have that.

Mr. COLLINS. That would be very helpful. If you could supply it, it would document this statement, which otherwise is undocumented.

Mr. NAU. I would be glad to.

(The material referred to was marked "Exhibit No. 18" and appears on page 214.)

Mr. COLLINS. I don't want to suggest any elaborate documentation, but you also said:

> A careful review of the Federal Trade Commission reports of 1934 on Utility Corporations will reveal, in part at least, the extent to which State research agencies and even individual college professors, were influenced by the vast and sometimes subtle powers of the electric utility industry.

Is there any way that you can briefly document that for the record?

Mr. NAU. I might get that—it is a long work—and I think I remember offhand a few cases.

Mr. COLLINS. A summary in a few pages might be helpful.

(The material referred to was marked "Exhibit No. 19" and appears on p. 215.)

Senator JOHNSON. Just political rather than technical?

Mr. NAU. Oh, I think it was both.

Senator JOHNSON. I know there has been a very strong political influence along that line, but I didn't know that it extended into the technical field.

Mr. NAU. I am not too clear on the technical side——

Senator JOHNSON (interposing). For the purposes of this bill, we would be more interested in the technical side of it.

Mr. NAU. Yes.

Senator JOHNSON. I think the principle is pretty well established. Are there any other questions?

Dr. SCHIMMEL. I want to get that research situation a little clearer. Who does most of the research in the electrical field today?

Mr. NAU. It is done, I think, largely by both the manufacturers and the utility companies, and their various associations, such as Edison Electric Institute.

Dr. SCHIMMEL. Have you ever checked on the actual number of research workers in the various phases of the electrical industry? I think the bulk of the research is done in the manufacturing industry, is it not?

Mr. NAU. I think that would be a safe estimate, although I have never checked as to the numerical aspect.

Dr. SCHIMMEL. What are the relations of the Public Power Association with manufacturers?

Mr. NAU. We have established practically none; we have been operating only about a year and up to the present time, as an association, we have been digging a foundation.

Digitized by Google

Dr. SCHIMMEL. What are the relations of the municipal power systems with General Electric, for example? Are there any firm relations there so that the problems brought by the municipal power stations to GE are studied? Has that ever been tested?

Mr. NAU. I don't know whether that has been tested and analyzed. Offhand, I would imagine—and this is a very general statement—that they do not; being a relatively insignificant portion of the total market, they would not carry much weight compared, for example, with the weight that a billion dollar utility corporation might have with G. E.

Dr. SCHIMMEL. The impression your testimony gives—and you may correct me—as well as Mr. Ellis', is that the manufacturing companies are affiliated financially with the public utilities, and, therefore, the manufacturing companies, who do the bulk of the research, are hesitating to bring out new developments which will cut into the income of the utilities.

Now, presumably, the public-power systems would be hindered by the same factors——

Mr. NAU (interposing). I shouldn't think so. That again gets back to what the Senator said awhile ago with respect to competition.

Senator JOHNSON. As a matter of fact, there is real competition between the manufacturers of electrical devices—Westinghouse, Edison, General Electric?

Mr. NAU. Oh, yes.

Senator JOHNSON. I don't entirely agree with your testimony that the municipally owned distributors and producers suffer because of any special privilege that is being extended to the private distributors and producers.

Mr. NAU. It is awfully difficult to measure, it is one of those unseen things, but the sheer element of size alone has been a factor. If you are a vendor of equipment and you sell 80 or 85 percent of your goods to one person, and 15 percent to others, you can imagine——

Senator JOHNSON (inteposing). There are no market restrictions, however, in the purchase of equipment.

Mr. NAU. None.

Dr. SCHIMMEL. The thing I am concerned with is: Do your public-power systems bring proposals for research developments to GE, and are they carried out?

Mr. NAU. I imagine that has been done, but, as I say, I have been there only 8 or 9 months, and we haven't gotten into that. I couldn't speak of my own personal knowledge.

Senator JOHNSON. You wouldn't have peculiar problems; your problems would be the same as those of private industry?

Mr. NAU. Technically speaking, precisely the same.

Mr. SCHIMMEL. But they have made the point, Senator, that the private industry hesitates to bring to the General Electric Co. proposals which will involve eventually reducing the total amount of power, and that is readily understandable——

Senator JOHNSON (interposing). I don't think it is readily understandable. As a matter of fact, I just don't believe it; I don't believe that there is anything in that argument at all. I think it is just someone's opinion. I don't think it can be supported. I don't think the facts will support it in any degree.

Digitized by Google

Mr. COLLINS. Have you any facts that would support that statement in your testimony?

Mr. NAU. No; I do not. The fluorescent case, which has been covered rather completely, is one example which may be in point.

Senator JOHNSON. Are there any other questions?

(No response.)

Senator JOHNSON. If not, the committee will stand adjourned subject to the call of the chairman.

(Whereupon, at 11:50 a. m., the committee adjourned, subject to call.)

EXHIBIT No. 17

HISTORICAL NOTE ON MUNICIPAL POWER PROJECTS IN THE UNITED STATES

Development.—A brief history of the development of municipal power projects in this country as background material obviously cannot cover more than the highlights, going back as early as 1881. No attempt is made to give details but this brief statement will enable the uninformed to appreciate the problems of this small segment of the public power field.

Municipal power plants came into being for two main reasons: First, a desire on the part of the public for electric service in their community in the absence of nearby power lines from which extensions could be made; and second, extraordinarily high rates for service which inhibited wide use of power and kept consumption down. On this point a study of statistics will show a very real and positive relationship between the price per kilowatt-hour and the consumption. As the price drops, consumption increases.

The first municipal plant—the first public power system in this country—was established in Pennsylvania in 1881, followed the next year by additional plants in Ohio, Michigan, Iowa, and Kansas. At the time of Edison's Pearl Street station in 1882 there were 7 privately owned electric systems in operation and 1 publicly owned system. Municipal plants continued to increase in number until they reached a total of 3,066 in 1923, concentrated for the most part in the west north central section. The number of plants has not remained constant although today there are still approximately 3,000 in operation, roughly 300 of which are in competition with privately owned systems.

Management.—The fact that municipalities are political subdivisions of a State naturally has had an influence on the management problems of the electric utilities. Generally speaking, administration of the electric systems comes under a board or commission usually selected by elected officials. There are many varying kinds of municipal plant administrations, but generally the policy-making officials compose a board which is responsible for employing a manager and additional personnel as may be required. In small communities, village clerks, or other such officials are frequently responsible for the operation of the power plant. In the larger systems technically trained and experienced engineers are employed together with a complete construction and operating organization. The manager usually has complete authority for all operations within the general policies established by the controlling board.

Statutory authority.—The little history that has been written in this field reveals, however, a definite lack of proper and uniform statutory authority for efficient operation of municipal power plants. Much of this has been due to those interests which consistently oppose the legislation favoring the principle of public power, such as those involving boundary and franchise restrictions, power to issue self-liquidating securities, and so forth.

Financing.—Prior to 1925 general obligation bonds, a direct obligation of the city, was the general method used to secure the necessary capital. These bonds were supported by the taxing authority and provided a lien on taxable property. Since 1925 so-called revenue bonds have become more generally used until today they are preferred a method of financing. These bonds, usually payable serially, are secured by net revenues, and provide no lien on the physical properties.

Many municipally owned systems have fully paid off their bonded debt and while complete data is not available a recent study of 756 municipally owned utilities, scattered all over the country, revealed that 39.4 percent were entirely

Digitized by Google

debt free. The effect on rates in the absence of debt service requirements is obvious.

Regulation.—In most States certain regulatory powers are delegated to a public service commission or other State agency which is empowered to grant franchises or certificates of convenience and necessity in the public interest. Also, the laws of some States on the rules of the public-service commissions require that uniform accounting systems be followed by public, as well as private plants.

Rates.—Up to 1925 there was a noticeable change from the old system of flat rates to the promotional type rates now available to all consumers of electric power. Although a direct comparison of rates between municipal and private systems is difficult because of the many varying factors, the Federal Power Commission report for January 1, 1943, comparing lowest and highest typical electric bills shows that—with one exception—the lowest bills for residential service in cities of 50,000 population and more were those rendered in communities served by publicly owned utilities while the hihgest bills were those of privately owned utilities.

The rate problem has been affected by the tendency on the part of many municipal plants to allocate surplus funds to other civic functions, thus reducing the over-all tax rate but delaying the number of rate reductions which consumers might normally expect. The latter plan has also been encouraged by the private companies because it results in higher over-all rates.

Taxes.—While it is true that mupicipal power systems do not pay all Federal taxes, they do render free public services, and make payments in lieu of taxes which usually exceed the amounts which are required under private ownership.

Physical plant.—Under existing methods municipal systems have not been subject to integration in the same manner as private company facilities; consequently technological advances in the transmission and distribution of electric energy have not had the effect on municipal systems that they have had on private systems. A few municipalities do serve other municipalities, but generally they are isolated generation and distribution, or merely distribution systems, surrounded by lines of private companies which may be serving adjacent territory. A rough estimate would seem to indicate that some 1,000 of the 3,000 municipal systems generate their own power. The rest buy power either from public or private sources.

Research facilities.—I do not believe that there are a hundred municipal plants that are large enough to afford their own research laboratories and facilities. As the average municipal plant is comparatively small it should therefore be noted that much of the research and study conducted in the field by private systems and manufacturing groups is not readily made available to the average municipal plant.

EXHIBIT No. 18

THREE TECHNICAL COMMITTEES OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

(From American Institute of Electrical Engineers Yearbook 1941)

COMMITTEE ON DOMESTIC AND COMMERCIAL APPLICATIONS

Alexander Maxwell, chairman, Edison Electric Institute.
J. O. R. Coleman, secretary, Edison Electric Institute.
L. F. Adams, General Electric.
J. H. Foote, Commonwealth & Southern.
J. L. Hamilton, Century Electric Co.
S. J. Lisberger, Pacific Gas & Electric Co.
R. B. Shepard, Underwriters Laborators.
Frank Thornton, Jr., Westinghouse.
W. C. Wagner, Philadelphia Electric Co.

Digitized by Google

COMMITTEE ON POWER GENERATION

W. L. Cisler, chairman, New Jersey Public Service Electric & Gas.
A. C. Monteith, vice chairman, Westinghouse.
F. A. Annett, Associate Editor Power (McGraw-Hill).
C. A. Carney, Boston Edison Co.
F. H. Davies, Detroit Edison Co.
J. J. Dougherty, Duquesne Light Co.
H. A. Dryar, Philadelphia Electric Co.
J. H. Foote, Comonwealth & Southern.
R. L. Frisby, Kansas City Power & Light Co.
F. W. Gay, New Jersey Public Service Electric & Gas.
W. D. Hardaway, Colorado Public Service Co.
N. B. Hinson, Southern California Edison.
J. A. Koontz, Pacific Gas & Electric.
A. J. Krupy, Commonwealth Edison (Chicago).
O. L. LeFever, Northwestern Electric Co.
V. M. Marquis, American Gas & Electric.
C. W. Mayott, Connecticut Valley Power Exchange.
C. H. McKnight, Scranton Electric Co.
F. J. Meyer, Oklahoma Gas & Electric.
G. M. Pollard, Buffalo Niagara Electric Corporation.
G. E. Quinan, Puget Sound Power & Light Co.
C. R. Reir (not given).
J. R. Smith, Louisville Gas & Eectric.
E. C. M. Stahl, Consoldiated Edison of New York.
M. J. Steinberg, Consolidated Edison of New York.
Robert Treat, General Electric.
E. C. Williams, Public Service of Northern Illinois.

COMMITTEE ON WELDING

J. D. Wright, chairman, General Electric Co.
J. H. Blankenbuchler, Westinghouse Electric Co.
L. W. Clark, Detroit Edison Co.
W. E. Crawford, A. O. Smith Corporation.
J. W. Dawson, Raythion Manufacturing Co.
D. D. Ewing, Purdue University.
G. W. Garman, General Electric Co.
K. L. Hansen, Cutler Hammer Co.
C. E. Heilman, Jr., A. O. Smith Co.
W. F. Hess, Rensselaer Polytechnic Institute.
S. M. Humphrey, Taylor Winfield Corporation.
J. H. Lampe, University of Connecticut.
G. G. Landis, Lincoln Electric.
C. I. MacGuffie, General Electric Co.
F. W. Maxstadt, California Tech.
C. L. Pfeiffer, Western Electric.
C. A. Powel, Westinghouse.
E. H. Vedder, Westinghouse.

EXHIBIT NO. 19

EXCERPTS FROM FEDERAL TRADE COMMISSION REPORT ON UTILITY CORPORATIONS (DOC. 92, PT. 71A, 70TH CONG., 1ST SESS.)

UTILITY COOPERATION WITH THE SCHOOLS

The utilities' aim in giving attention to educational institutions, as stated by the Illinois committee on public utility information, "is to fix the truth about the utilities in the young person's mind before incorrect notions become fixed there."

Digitized by Google

The Illinois committee pioneered in this field. By 1922, however, the National Electric Light Association had taken up the plan. Acting apparently on the proposal of Samuel Insull, who earlier had emphasized "the great need of a campaign of education in the colleges and other institutions of learning," the national association in December 1922 appointed a committee on cooperation with educational institutions. In accordance with suggestions from this committee and benefiting from the success of the Illinois plan, work in educational institutions was undertaken by State committees in Indiana, Pennsylvania, Colorado, Wyoming, New Mexico, Wisconsin, Oregon, and other states.

With the schools as with the newspapers, public utility officials realized the necessity of creating good will. This was done in a variety of ways. Deliberate cultivation of friendly relations with school and college men often did the trick. In other cases, where caution was necessary, a roundabout approach was used. In Texas in 1923, for example, the utilities were "feeling their way into the schools with the Constitution." Definite pains were taken to obtain the approval of college professors. Referring to teaching as one of the "starveling professions" (the others, the church and the press) Dr. C. A. Eaton, president in 1924 of the American Educational Association and a General Electric Co. industrial relations manager, advised the National Electric Light Association convention "to give thought to the teachers and when their vacation comes pay them a salary to come into your plants and into your factories and learn the public-utility business at first hand," M. H. Aylesworth, then managing director of the National Electric Light Association, put it this way: "* * * Once in a while it will pay you to take such men, getting five or six hundred or a thousand dollars a year, and give him a retainer of one or two hundred dollars per year for the privilege of letting you study and consult with him. For how in heaven's name can we do anything in the schools of this country with the young people growing up, if we have not first sold the idea of education to the college professor?"

This pointed advice was widely accepted. Professors of journalism of well-known universities, directors of cooperative Federal and State extension in agriculture and home economics, *faculty members from outstanding private universities and research institutes cooperated in various ways with the State utility information committees.* Cooperation was gained in many cases with faculties in institutions of higher learning. In many colleges and universities courses of study were established which appeared to be sponsored by faculty members but which *were, in fact, suggested by the utilities. Funds for the support of research scholarships were received by many institutions.* Elementary and college textbooks were surveyed to determine their attitude on the electric and gas utilities. In some instances information given out by the State information committees was utilized in correcting the viewpoints of books considered bad or unfair. In other cases, new or substitute texts were prepared and introduced into the public schools. Educational authorities in certain States were approached directly in order to improve the textbook situation. In numerous cases, thousands of pamphlets presenting the utility point of view were introduced by the State committees into public schools. [Italics supplied.]

See appendix 12 of same report (p. 426) entitled "Compilation of Payments by Utilities to Educational Institutions and Educators."

Also see section of same report entitled "Educators and Schools" (p. 139–221).

Digitized by Google

EXHIBIT No. 20

ADDRESS BY ALBERT PARSONS SACHS AT THE MEETING OF THE ASSOCIATION OF CONSULTING CHEMISTS AND CHEMICAL ENGINEERS, INC., NEW YORK, N. Y., APRIL 26, 1943

Mr. President, members of the association, and guests: I have been instructed to present a report on the Kilgore bill, S. 702, of the Seventy-eighth Congress, first session. I have not taken my instructions lightly and I have devoted time and consideration to the task.

We have been told by Senator Kilgore that this bill is so essential—I hesitate to say it—that the future of the Nation practically depends on it. We have been assured by some of our colleagues, both within and outside of this association, that the Kilgore bill will deprive us of our rights, our livelihood, our economic position; that this bill is worse—mind you, not equal to but worse—than communistic, combining, it is alleged, the worst features of both the capitalistic and the communistic systems.

As I shall point out more fully later—and why—we make our decisions in matters of this kind first and then hunt for reasons to support our decision. And a lot of people simply refuse to read the plain provisions of the bill, as if they were afraid that a simple reading might soften their opposition. This method of rationalization is not the exclusive habit of chemists, of course; it is the penalty of being able to think at all. I venture to believe that with respect to this bill most of us have opinions already which no amount of discussion will alter. We behave, in fact, quite analogously in our thought processes to those millions of southern white gentlemen who have voted the Democratic ticket ever since the Civil War. To them a Republican vote would be insane on the one hand and treasonable on the other. Formally they pledge allegiance to the Democratic Party while in practice they frequently sabotage its policies. Is this unreason also true of us, northern as well as southern, in other matters than politics?

But I do feel that our society, our American way of life which is our society, is a living, evolving institution, that its success as a mode of life is due primarily to its adaptability to the changes in our life. I look upon the greatness of our beloved country as rooted deeply in our ability to adjust ourselves and our institutions to a changing world and changing conditions. Our country in its beginnings was primarily agricultural; it became profoundly industrialized and then industry became firmly based on science, on investigation, and invention. We must change our institutions to meet these changed conditions.

Let us take an example. The Department of Commerce used to deal with problems concerning labor. But the problems of labor, particularly in view of the industrialization of the country, became more important. So Congress by an act effective March 4, 1913, created a Department of Labor. Of course there had been opposition to this change but no one today would want to turn back the march of time and abolish this Department.

I believe with all the fervor of which I am capable, I believe as a citizen, I believe as a scientist, I believe as a member of this association, that the time has come for the establishment of a Department of Science and Technology. I do not expect this Department to spring into being full formed but I do believe that the Kilgore bill is the first important step in the direction of a Department of Science and Technology.

Some of you have perhaps read articles by David Lawrence who writes the principal editorials for the United States News and also writes a daily article for the New York Sun. Neither of these publications nor Mr. Lawrence could be justly referred to as radical; in fact, if they should be permitted to name their own description, "conservative" would be their own description of choice. Others might even call them reactionary.

In discussing the Delano plan contained in the report of the National Resources Planning Board in his editorial in the United States News for March 26, 1943, Mr. Lawrence says: "Many observers have read excerpts from the Delano plan and have condemned it as a piece of state socialism. Others have referred to it

Digitized by Google

as a plan for Utopia. The Delano plan ought to be read and studied carefully not as a formula for handling either the transition period that will immediately follow the conclusion of hostilities or as a blueprint for the post-war era. It is neither. It is a provocative report designed to stimulate the thinking of the American people, and particularly of our molders of public opinion and legislators, on the tremendous problems that lie ahead. We have too long in America been prone to dismiss intolerantly anybody with a plan for social betterment just because it might hurt our pocketbooks or interfere with our preconceived theories of how life should be ordered under a highly individualistic system. That has been called laissez-faire but a better name would have been Micawberism—always waiting for something to turn up to solve ills that we refuse to face. The time has long passed when we can permit in America the abrupt turning of the key in big factories as depression occurs and assume that the small towns and communities and even the sparsely populated States will suddenly take care of the unemployment problem created by the impact of national and international influences of an economic character far removed from these towns and villages. Totalitarianism came to Europe, whether under fascism or communism, because of economic disorder. This arises when representative government fails to represent the people, when democracy fails to organize itself for action within its own borders—in short, when everybody's business becomes nobody's business. There is a place for the individual and for the State in economic society, but the blending of these two obligations cannot be accomplished through over-emphasis of one or the other." * * *

I neither approve nor disapprove of Mr. Lawrence's remarks. I feel that I can fairly quote Mr. Lawrence's masthead which he runs above every editorial, the immortal words of Voltaire: "I wholly disapprove of what you say but will defend to the death your right to say it."

We have our journals and I sometimes wonder whose opinion the editors represent in their editorials. In the April issue of Industrial and Engineering Chemistry, the editor attacks the Kilgore bill. I wonder—and I say this not cynically but inquiringly—how he arrived at the conclusion that the chemists of our Nation, the rank and file of our profession, the men with small salaries and a little glory, oppose this bill. I do not wish to be personal, but contact with the Washington office of the American Chemical Society, with advertisers, with the big names of chemistry is not precisely the way to learn the wishes of the rank and file. And I do believe that if a referendum is taken of the opinions of all chemists, of the poorly paid employees as well as of the more successful and highly placed, the result will shock those who assume that naturally all scientists and technologists oppose the Kilgore bill.

But just as I have felt it advisable to criticize the American Chemical Society's assumption of right to speak for the chemical profession without consulting the membership, I must in fairness state that in the News Edition for April 10, page 508, there is an unbiased because uncommented report of Judge Arnold's testimony before the Subcommittee on Technical Mobilization of the Senate Military Affairs Committee in support of the Kilgore bill. I quote the News Edition: "Highlight of 'Trust-Buster' Thurman Arnold's appearance in support of the Kilgore bill (S. 702) was the statement that the measure is 'the Magna Charta of Science.' The former United States Assistant Attorney General in charge of the Antitrust Division, Department of Justice, and now a Federal judge, was the only witness called at the special hearing. 'I assume,' said Judge Arnold, 'that I have been subpenaed to testify before this committee because of my experience with the abuse of patent privileges by domestic and international cartels. The evidence is overwhelming that practically all our shortages in basic materials and in chemicals, the very things that are necessary to give us strength in war and wealth in peace, are due to the control of research and invention by domestic and international cartels. If the committee cares to go into detailed hearings it will find that the production and distribution of such vital elements as magnesium, zinc, rubber, aviation gasoline, beryllium, titanium, electrical equipment, plastics, dyestuffs, machine tools, fuels, communications, and a variety of other products necessary for both our war effort and our industrial progress have been impeded and delayed, and in some cases totally blocked, because private groups dominated industrial research. To break that control, to free our economy, in the new industrial age which every forward-looking technician believes is coming, as well as to speed up the war effort, we must break up the patent pools which put barriers against independent initiative in research and invention. But this alone is not enough. The patent itself is only an instrument of aggressive warfare to stop invention by persons not employed by

Digitized by Google

our great cartels. The control of "know-how," the knowledge of results of basic experimentations is even more important than patents. Out of that control patent monopolies get their start. It is the foundation on which patent pools are built. The bill is designed to break the corner on research and experimentation now enjoyed by private groups.'"

I tell you it is my considered opinion that science is only at the threshold of its greatest advances. I tell you that science and technology are about to change the face of the earth and the ways of life of all mankind. I tell you that under our capitalistic democratic system of unfettered enterprises we are unprepared to take full advantage of these advances because the sole motive of our capitalistic system is the creation of profits—profits actual and profits reasonably potential. This is no reflection on capitalism any more than it is a reflection on elephants to say they have trunks or on tigers to say they have stripes and are carnivorous. In each case it is merely the nature of the animal. Capitalism has great achievements to its credit. Yet it is incapable of solving all of our problems. One of the problems it has not been able to solve is the production of materials and equipment which may be necessary for the very life and safety of the Nation, the production of which may be unprofitable.

Let us take synthetic rubber. We, the chemical profession, have known since before World War I that synthetic rubber could be produced—but probably not profitably in competition with natural rubber. We did not expect, we could not expect, the capitalistic production system to give us the necessary synthetic rubber we needed as a matter of life or death in case of war. But when war came, we, the people, through the Government we had freely elected, went about producing the necessary synthetic rubber, plants for the raw materials, plants for the condensations or polymerizations necessary, and we shall have the production—several years late. And let us not deceive ourselves; the production is being achieved not by the capitalistically organized companies but by our Government. It provided the money, allocated the construction and manufacturing materials, and provided the raw materials. This I submit to you is the actual working of the set-up envisioned by the Kilgore bill; this is an unofficial, unplanned Kilgore plan. What has been done is to advance the cause of technology without regard to cost or profit, and with regard only to the national welfare. Why in the name of all that is reasonable do we have to wait for a war to compel us in a moment of danger to do precisely what we could just as intelligently and more usefully do in time of peace as well as in time of war Let us not forget that the issue is not capitalism or anticapitalism, but survival and development of our America. If a noncommercial post office fills our communications requirements best, let us continue to have a nonprofit-making post office. If a department of science and technology will serve our national needs better, let us have it.

It is customary to speak of the great advances made under the capitalistic system and to claim that all these advances are due to the capitalistic system. It is a little difficult to accept this interpretation. While I have no wish to set up the Soviet system as a guide for us, anyone who is at all familiar with scientific advances made in the Soviet Union—incomparably greater than under the Czarist regime—will have to admit that great scientific advances can take place under either the capitalistic or socialistic system. I believe the problem is too complicated to be described merely in terms of the economic system prevailing. I have no doubt that the economic system has an effect on the progress of science and technology, but I think each economic system can lead to progress, although predominantly in different directions. For example, I believe the production of gadgets will thrive best under the capitalistic system, while fundamental research will thrive best in the atmosphere of socialism. I must point out that in discussing the Kilgore bill, it was not my intention to compare or contrast existing and competing economic systems, because I am assuming that we will continue to live and prosper under the capitalistic system. But the opponents of the Kilgore bill have developed an argument that runs in substance: We have great scientific and technical achievements in the United States. The achievements are due entirely to our system of free enterprise under capitalism. Under no other system could they occur. To enact the Kilgore bill would be to place the progress of science outside of the capitalistic system and thus condemn science to asphyxiation.

The argument is invalid all along the line. Scientific progress of a high order at a high velocity occurs under the socialistic system prevailing in the Union of Soviet Socialist Republics. Whether it occurs because of the existence of social-

Digitized by Google

ism or in spite of it I cannot say. What I do say is that the existence of capitalism is not the sole possible prerequisite to scientific progress. Furthermore, the establishment of a Department of Science and Technology of the Government is not a denial of or destruction of capitalism. It would be as logical to say that the establishment of our public-school system was a denial of capitalism and an introduction of socialism into our lives. The fact remains that under any economic system there will exist certain institutions which are merely the means by which the system lives. Just as a Nazi and an American democrat both must have eyes and lungs to live regardless of their differing political ideals, so the state, whether it be capitalistic or socialistic, must have organs called institutions to permit it to live. Capitalistic France and socialistic Russia both had state-owned railway systems; capitalistic America and socialistic Russia both had state-owned post-office systems and educational systems. There is nothing specifically socialistic about a government-controlled Department of Science and Technology. Our state remains capitalistic so long as private ownership of the means of production continues and the private profit principle prevails. It is not essential for capitalism that all ownership be private. Parks, post offices, battleships, and even laboratories and arsenals can be owned by the state under the capitalistic system. This is so obvious it seems to require no setting forth, but some opponents of the Kilgore bill see some advantage to their argument by pretending to believe that the Kilgore bill is socialistic in its objectives.

One of my fellow members was kind enough to remark on my dispassionate judgment on a similar occasion and I began forthwith to annoy myself with irritating questions. How did you get into that state of grace, I asked myself bluntly, but I found an answer. The answer was that I yearned to find the little bit of good that exists in the worst of us just as vehemently as I tried to ferret out the bit of bad that lurks even in the best of us. This should qualify me as an analyst capable of determining trace elements. I might even claim to provide an impartial analysis of the Kilgore bill. If that is your expectation I shall have to disappoint you. For I am a consultant and not an analyst. As a consultant my task is frequently to furnish that which is wanted. And so with the Kilgore bill. I am not so much interested in the Kilgore bill as it is, which would make me an analyst, as I am interested in the Kilgore bill that might be, which makes me a consultant. Expect no impartiality from me—but also expect no gross prejudice.

Whether a given bill or a given aim is desirable for you or for me seems to me to a large extent to depend on what your ideals and my ideals are. We may say it depends on our "philosophies." And reasonable men may arrive at different conclusions from the same set of facts if their philosophies differ, for reason is no absolute. It would be wonderfully fatal to argument if there were some absolute standard of reason by which men could arrive at the best possible conclusion, but men are moved by emotion as easily as by reason and either process convinces them that they have arrived at wisdom. We need remember only that the South less than a century ago considered Negro slavery moral and necessary while the North, by and large, considered it immoral and unnecessary. Back of these contradictory ethical judgments on the morality of the institution of Negro slavery was an economic causative factor—the South was largely controlled by a group whose economic power was based on slave labor, while the controlling group in the North based its economic power on wage labor. There was a conflict of economic interest between these two groups which was translated into the language of ethics. It is always more satisfying to one's self-esteem to say that one's conclusions are ethical or represent the American way than to admit that they represent larger profits to oneself.

I am not trying to read a homily on justice and economic interest.' That is a trifling matter which can best be left to those who are consultants in that field; but I do want to point out that economic interest most certainly colors our judgment. But in coloring our judgment, bluntly, in creating prejudices, it does not always lead us along the most profitable path—and I mean selfishly profitable—any more than mere hunger leads us to select the best foods. The industrialists in Germany who in their hunger for more profits and more power turned to the Nazi Party as their best bet in breaking the power of the unions did in fact get the unions broken as they planned and paid for. They also got an added something which some will live to regret and some will not live to regret, and probably none will live not to regret. For those cynics who say that capitalists and tories never learn and never forget I point with pride and pleasure to the fact that the National Association of Manufacturers had officially come out against

Digitized by Google

a bill to draft labor. That is certainly to their credit, regardless of whether we are ultimately compelled to draft labor. The National Association of Manufacturers has been accused of being reactionary and antilabor (on which point I will pass no judgment), but at least it has learned not to follow the German pattern. Perhaps they realized that they might succeed in crushing labor and live to regret it. So we may smash the Kilgore bill to earth and live to regret it.

I must return for a moment to the editorial in the April issue of Industrial and Engineering Chemistry. It was headlined "Scientific Regimentation." The editor is worried that the passage of the bill would strip the President of some of his powers. (I'll bet dollars to doughnuts he actually doesn't give a hoot whether the President loses any or even a whole lot of his powers, but it does sound important to make the point.) He says of the bill: "To the chemist, to the chemical engineer, to all scientifically trained men and women, it is a potential threat of regimentation and goose-stepping in war and in peace." To which I reply politely but firmly, "Horsefeathers!" The same day that I read the aforementioned editorial I also read (but not for the first time) while standing unpleasantly (but quite unregimented and un-goose-stepping) in the subway that spitting was forbidden in the car under section so-and-so of the sanitary code under pain of $500 fine or a year's imprisonment, or both. I could stand the year's imprisonment or the $500 fine if I became so thoughtless as to spit, but to be punished by both the fine and imprisonment would be too much. That would be—say I say—un-American and perhaps would regiment New Yorkers into becoming a race of un-subway spitters. Let us not take the technical language of a bill too much to heart. Actually we fine spitters $1 or give them a warning—whoever heard of anyone being fined $500 and/or being imprisoned for a year for spitting? But would you have the law state that the maximum punishment is a $1 fine and/or a warning? I give this, of course, not as an argument in favor of the Kilgore bill, but merely as an indication that the legal wording of a bill is the maximum measure of its powers, but not always a true measure of the powers it acquires in practice.

And so the Kilgore bill gives powers which, literally read are literally huge, but no one really believes that the regimenting power and the expropriation power which are specifically limited by the bill to wartime, could be exercised except in the moment of greatest national danger, even greater than the current danger; the courts still exist, the Supreme Court still guards our Constitutional rights, cynics and Roosevelt-baiters to the contrary notwithstanding. I do not believe that anyone honestly thinks that the passage of the Kilgore bill would in fact rob us of our freedom. The powers granted, even for wartime, are permissive and not mandatory, are limited and not limitless.

So, when I am told that the Kilgore bill will spell ruin for my profession I rush in where angels fear to tread. Mind you, so far I haven't said a word about the provisions of the bill itself and I really wish I didn't have to mention the bill at all because the bill has certain features and clauses which are difficult to interpret in terms of reality and which might in fact seem to some people to be laden with the seeds of evil. At least opponents of the bill might point with fear to certain clauses which simply do not frighten me. And yet the bill has certain objectives which I most highly will recommend. Perhaps if Senator Kilgore were here he might reproach me as a poor analyst of his bill—or he might engage me as a consultant to assist him to draft a new bill.

Actually we are told that the Kilgore bill has no chance to pass this session of Congress, in fact, that it has no chance of being brought to a vote. Some of the opponents of the bill have asked that the bill be not discussed at all; to kill it by silence is their plan and hope. For this reason particularly I feel justified in paying more attention to the facts which demand a scientific mobilization bill—not necessarily the present bill—than to the specific terms of this bill, which I shall however discuss in due time. I believe that first things should be first done. I believe that we scientists, we technologists, should first acquire belief in the necessity for a Kilgore bill and then should go out and do a whale of a job in getting the best bill in the world passed by Congress.

Some people object that a director at $12,000 is just another political job at $12,000, implying that a $12,000 bit of patronage is rich gravy, while others assert that $12,000 is chicken feed if you want a first-class director. We can come back to this little difference of opinion later and I think there is a very reasonable and workable compromise.

Now, some people object that an annual appropriation of $200,000,000 is a fantastic sum for scientists to have the spending of each year. Why it is almost precisely the cost of fighting the present war for 1 day; but others object that $200,000,000 per annum is too little to accomplish anything with. May I make

Digitized by Google

the following remark merely as the random thought of a roving scientist?" It is my opinion that if we had had for the past 10 years at $200,000,000 per year a great program of scientific research, directed toward improving the position of the United States in war and peace in the matters of strategic raw materials in which we are not self-supporting, as for instance, rubber, tin, quinine, alumina, tungsten, manganese, mercury, etc., in the matters of aviation, submarine, anti-submarine, tank, antitank, and other military devices, we would at a total cost of 10 days of war expenditures spread over 10 peaceful years have improved our present relative position so that we would have shortened the ultimate duration of the war by at least 10 days, thus returning the entire cost, and we would have lessened the current costs of many materials and devices for a dividend on our investment.

These are, of course, only two features of the bill, one relating to the Administrator's salary and the other to the appropriation necessary. Neither detail I am sure, however it be decided, will regiment us chemists. Of course, I could read the bill to you and comment on it section by section. That might be good exercise for my voice but probably not very enlightening to your minds nor entertaining. For the moment I will say that the purposes of the act are set forth in 12 headings which I will read to you in brief form:

(1) To develop comprehensive programs for the maximum use of science and technology for the national benefit in war and peace;

(2) To mobilize for the prosecution of the war all scientific facilities and personnel;

(3) To facilitate the transition from the tasks of war to peacetime enterprise;

(4) To assemble, coordinate, and encourage publication of all scientific information and data;

(5) To promote the full and speedy introduction of the most advanced and effective techniques in all aspects of the national life;

(6) To aid and encourage and protect the research and enterprise of inventors, scientists, etc., and to make their discoveries more readily available;

(7) To discover and develop substitutes for strategic and critical materials;

(8) To promote interest in scientific and technical education and provide for all qualified persons the means of scientific and technical training and employment;

(9) To provide guidance in scientific and technical matters to the President, Congress, Federal, State, and local governmental agencies and establishments, etc.

(10) To promote the maintenance and expansion of free enterprise by making available to smaller businesses the benefits of scientific advancement;

(11) To standardize when in the public interest, scientific and technical designs, practices, and specifications; and

(12) To establish a national scientific and technical office to coordinate the activities of all the available facilities.

I say it with all the earnestness I can summon that these purposes are a great challenge to the scientists of the country, a glorious opportunity and if effectuated by a properly drafted bill, a grand charter of freedom to science and technology to grow into a magnificent future.

An independent agency of the Federal Government, the Office of Scientific and Technical Mobilization is created.

The structure of the organization is interesting: There is an Administrator appointed by the President at $12,000 per annum and six other members of a National Scientific and Technical Board at $10,000 each. Some of my colleagues object that a really high-class administrator to control the expenditure of the proposed $200,000,000 per annum cannot be had for $12,000 per year. I would suggest that we amend the bill and provide a salary of $100,000 per annum and thus show the movie stars that a scientist heading a vast organization is worth to the people of the United States almost one-fourth as much as the movie stars have been accustomed to get. After all, the people of the United States pay the salaries of both the movie star and the scientist and they would probably be willing to pay a topnotch scientist controlling a vast organization destined to render us supreme in war, economically independent, agriculturally progressive, with employment and profits for all almost one-fourth as much as an actress who gives me a laugh once a year, if I can stand seeing the awful vehicle in which she is usually starred.

If you still believe—as a result of that process of thought which we are pleased to call reason—that it is wise for us to have a whole mess of movie stars who receive—I cannot say "earn"—several hundred thousand dollars a year, for which

Digitized by Google

we are taxed just as truly as if there were a law fixing their salaries, while $12,000 or $20,000 is completely adequate compensation for the greatest of scientists, I will go with you and limit the Administrator's salary to $12,000 or $20,000. After all, a Senator gets $10,000 a year and no one will deny that a Senator is the wisest and most learned of men and that no one should be expected to hope for more than a senatorial stipend by way of a bill which Senators must pass—or at most $12,000. I have no doubt, however, that able men, yes, the ablest men in the country will accept the offer of the Administrator's position because of the great civic honor of heading such an office, the security and the pension which await the competent man in such an office, the esteem of the community. The salary will not represent affluence, but great and worthy citizens will answer their country's call to the administratorship or to the Supreme Court without weighing too carefully their salaries against possible income in private practice. I consider a libel on the profession the declaration that a competent scientist will not be found to head the office at $12,000 a year.

Well, there is this paid board of seven, and a national scientific and technical committee consisting of the above board, one representative from each of such Federal departments as the President may designate, four representatives of the consuming public, three additional scientists or technologists, six additional members representing labor and six additional members representing management, all except the first seven to serve without compensation and to meet regularly not less than once a month.

Naturally, the powers of the Administrator, the board, and the committee are set forth in the bill. To avoid any possibility of misunderstanding I will read section 4 of the act (pp. 8–11):

"POWERS OF THE OFFICE. To effectuate the purposes of this Act, the Office shall be vested with the following powers and duties which it shall exercise and perform under the direction and control of the Administrator:

"(a) To take and keep a census of scientific and technical facilities, requirements, and personnel in the United States and its possessions and to provide archives for all scientific and technical material coming into the possession of the Government or any agency or department thereof.

"(b) To formulate and promote projects and programs for the development and use of scientific and technical facilities and personnel and, when necessary, to initiate and carry out such projects.

"(c) To foster and develop scientific and technical methods, to promote their application in the national welfare, either within the Office or by other auspices, public or private, and to promote and provide training and participation in science and in its application.

"(d) To ascertain and assess scientific and technical developments in relation to, and to study their impact upon, the national welfare, or any particular category thereof.

"(e) To solicit and to receive aid and support from any source for the advancement of scientific and technical methods.

"(f) To coordinate the scientific and technical data, methods, and facilities of, or available to, all agencies and departments of the Federal Government.

"(g) To foster international cooperation in scientific discovery and the application thereof; to acquire information with respect thereto from other countries and their nationals; to exchange scientific and technical personnel and information with such countries; and to engage in other suitable forms of international collaboration relating to science and technology.

"(h) To make available, upon request, to the President, to the Congress, and to other persons or establishments (upon such conditions as the Administrator shall prescribe), technical guidance and assistance and any record or other data necessary therefor.

"(i) To review specifications, standards, and designs of military and civilian products and services and their methods of production and supply and to recommend suitable simplifications and changes therein.

"(j) To finance by loan, grant, exchange, purchase, or otherwise the operations or functions, or any of them, authorized by this Act, and for the same purposes, to make or acquire any contract, guaranty, indemnity, stipulation, lease, or other instrument, to acquire, improve, and alter real and personal property, and to enter into any other transaction necessary or appropriate for the performance of its duties or powers.

"(k) To acquire patents and patent rights, and to authorize the use thereof, subject to the provisions of section 7 of this Act, and to authorize the use or other disposition of any other property belonging to, or controlled by, the Office,

Digitized by Google

upon such terms and conditions and for such compensation as the Administrator shall determine, which compensation shall be payable to the Office.

"(l) To establish a system of merit awards to be granted to any agency, establishment, or person making any outstanding scientific or technical contribution to the national defense or the general welfare.

"(m) To make, amend, and rescind appropriate rules and regulations to carry out the purposes of this Act and all the powers and duties vested in the Office, which rules and regulations shall have the force and effect of law.

"(n) To avail the Office of the information, services, facilities, officers, and employees of any Federal establishment in carrying out the purposes and provisions of this Act.

"(o) To conduct such research and investigation touching upon the use and development of scientific and technical facilities and personnel as the Office may deem necessary and appropriate to carry out the purposes of this Act."

These powers are, of course, as read, extensive indeed, but they must be read in connection with the purposes of the bill. Take item (j); this refers to financing the projects. Now, obviously, if there are purposes and objectives of this independent office set-up to be carried out, we must implement the authority of the Administrator so that these purposes and objectives can be carried out. We cannot expect the Administrator to go before Congress to get a specific appropriation for each project. If, for instance, the Administrator decided that a project on the hydrolysis of straw is to be carried out, he must finance the cost in one way or another, or if the project is already under way under private auspices but cannot proceed because of lack of funds he must be able "to make or acquire any contract, guaranty, indemnity, stipulation, lease, or other instrument, to acquire, improve, and alter real and personal property, and to enter into any other transaction necessary or appropriate for the performance of its duties or powers." Must we scuttle the Office before it starts its journey by denying it the right to acquire, improve, and alter real and personal property as will be necessary if it takes over a pilot plant on the theory that such powers will enable the office to purchase the Empire State Building and alter it into bowling alleys with tennis courts on the topmost roof! Those who claim that the powers are dictatorial are invoking fears which they cannot possibly share and pretending to see a grant of powers which they know are not being granted. The powers granted must be in accord with the stated purposes of the legislation and cannot be read out of their context. These powers are permissive, not mandatory. No acquisition of property is made compulsory—the owners may do so if they wish and certainly they will not do so unless they consider it to their advantage.

In connection with the mobilization of personnel (section 5), there is a heading relating to deferments under the Selective Training and Service Act. I say unqualifiedly that I should far prefer to have deferments of scientific personnel under this Office than under the local draft boards. As for personnel outside of the draft, the Office, subject to direction by the Chairman of the War Manpower Commission, is authorized to provide the rules. If the Chairman of the War Manpower Commission wants the aid of the Office, he should be able to get it; if he does not need such aid or does not want it, the Office has no powers. I have no fear of regimentation from this section, for the Office has power only when requested to exercise certain powers already possessed by another establishment.

We then have a Mobilization of Facilities (sec. 6, (a) (1), pp. 13–14, line 10).

"(a) (1). During the existence of a state of war, whenever the Administrator determines, subject to review by the President, that (1) the use of any scientific or technical facility, or of any license, easement, privilege, or other right therein, is needed for the defense of the United States or the prosecution of the war; (2) such need is immediate and impending and such as will not admit of delay or adequate fulfillment by resort to any other source of supply; and (3) all other means of obtaining the use of such facility or of any right therein, upon fair and reasonable terms, for the defense of the United States or the prosecution of the war have been exhausted, he is authorized to requisition such facility and any rights therein and to dispose of the same in such manner, not inconsistent with this Act, as he may determine to be necessary for the defense of the United States or the prosecution of the war upon the payment of fair and just compensation for such property to be determined in the same manner as provided in Public Law Numbered 274, Seventy-seventh Congress, as amended, except that the Administrator, subject to review by the President, shall make all determinations in the first instance, respecting fair value of such

Digitized by Google

facility and right: *Provided*, That the requisitioning power herein granted shall not extend to any patent itself but shall be confined to licenses or any other right therein respecting user, together with the right to grant sublicenses."

Again I see this as a necessary power and one which should be granted.

Subsection (2) relates to the return of requisitioned facilities and (3) relates to reports; (*b*) relates to military and essential civilian investigations while (*c*) relates to representation before the War Production Board by the Administrator on behalf of other agencies. This is a power which gives no real added power to the Administrator and involves no vital principle.

Section 7 relates to patents. Let us be realistic. The bill declares that where Government money or facilities are invested in research, the resultant patents are vested in the Office. Surely, the Government is entitled to such ownership provided any contributions by others are properly compensated for as provided. The Government through this Office may issue nonexclusive licenses to use such patents at uniform charges under nonmonopolistic conditions. This, in my opinion, in no way affects our patent laws. Every corporation protects its patent interests; the Government is entitled to equal equitable protection.

This completes the consideration of all essential features of the bill. The bill, in my opinion, contains no provision which is detrimental to the national or individual welfare and it provides means for the accomplishment of necessary objectives.

In considering the Kilgore bill for which I have given this atmospheric description I have chosen primarily to consider its effects on and consequences for 132,000,000 and not primarily its impact on the several hundreds or several thousands or perhaps several hundreds of thousands of people who exist and thrive as consultants, scientists, and technologists.

RÉSUMÉ

I shall now summarize what I have had to say. The Kilgore bill marks an important milestone in the recognition of the place science and technology occupy in modern civilization and in the structure of the state. I believe that it is an important step toward the ultimate creation of a Department of Science and Technology whose administrative head will have Cabinet rank.

I recognize that in taking this important, this momentous, step forward, men of good will may differ about details of procedure, organization, and powers to be granted. I realize that there are vested interests (and by vested interests I mean not necessarily predatory interests but merely already acquired interests) which rush intuitively into an attitude of self-defense whenever the position under the law is to be altered. I realize that many large corporations enjoying virtual monopolies either through vast financial powers or through patent pools or patent structures will resist a change in the set-up. I do not consider this as a sign of inherent viciousness on their part. We have justified the making of profits both by law and morals, and the corporate attitude springs from this legal and ethical justification. However, we are growing into a more democratic belief that national welfare is best served by establishing the greatest good for the greatest number. While we have not yet come to the point where we will deliberately destroy by law the great industrial agencies, and I trust we never will, I do believe that we have concluded that it is just and moral in the national interest to control and regulate our great industries and to provide for the utilization of the national scientific and technological resources of the Nation for the benefit of the Nation. I believe unqualifiedly that the establishment of the Bureau of Standards, the laboratories of the Department of Agriculture, the regional laboratories, the Tennessee Valley Authority, the Navy Department, the Bureau of Mines, and a hundred others have all been steps in one direction, the logical terminus of which is that contemplated by the Kilgore bill and I believe that the time for integration of all these activities has arrived.

I believe further that the law and the devices by which the Nation lives and thrives are subject to improvement and evolution. We do not live for the law; the law is established to further our convenience. I believe that our patent system is due for an overhauling much more thorough than that contemplated by the Kilgore bill. The Kilgore bill refers only to the patents which arise from the operation of governmental agencies or from the use of governmental facilities, personnel, or money. Every corporation provides for the ownership, use, and disposition of the patents arising from the use of its facilities, personnel, or money, and our Government should do no less for the inventions arising from the

Digitized by Google

expenditure of the people's money. In addition to providing for vesting title in these patents in the appropriate Government agency, specifical provision is made to compensate anyone who is deprived of any property right under the workings of this law. This is equitable. If the details of the section dealing with patents require amendment, I suggest that we, the large corporations, and the patent attorneys work with the Kilgore committee on its successors to bring about meritorious modification of the proposed law. This will be more effective, more useful, more beneficial than merely resisting the passage of the law blindly. New conditions require new laws. Let us aid in making these laws as just and effective as possible.

Finally I find no regimentation of scientists provided for in the bill. The establishment of the Bureau of Standards, while it provided control over the technologists employed, did not regiment the scientists. Nor will the establishment of the Office of Scientific Mobilization regiment us. I have no fear that the control of personnel will be more intense than the act specifically states, namely, the control of occupational deferment in time of war. Wars, I trust, do not last forever, and even in wartime I would a hundred times, nay, a million times, prefer to put occupational deferments in the hands of such an office than to leave them in the hands of local draft boards. In the matter of mobilization of facilities I believe that only one who is easily scared by the bogeyman will be genuinely frightened by the provisions of the bill. Mind you, during a state of war and then only, the Administrator, subject to review by the President, may determine that a certain facility is needed for the defense of the Nation or to prosecute the war, that the need is immediate, and that all other means to obtain the facility upon fair and reasonable terms have been exhausted; then—and then only—he may requisition said facility upon payment of fair and just compensation, but no patent may be seized, and the facility is to be returned when the war is over. I believe that this procedure can be carried out at present when needed even without any Kilgore bill, but the procedure should be regularized as the bill provides. If the bill did not have this provision, I would be in favor of inserting it.

Finally, I would add a word about the alleged danger of governmental competition with the activities of our own members. It is an old cry. The financial danger to our activities has never arisen from the operation of Government laboratories, but only from the competition of unqualified inadequately skilled pretenders to the name and status of consultants and from the operations of university laboratories making substandard charges. But there has not been any claim that the governmental laboratories have poached on our preserves by either of these two methods, the carrying out of consultation work in competition with us by unqualified persons or at substandard charges. Only work of national importance is to be carried out by this organization of the Nation. A huge field remains to us and just as the creation of every Federal laboratory has led to more work and opportunities for men and organizations not part of the Federal scheme, so I have no doubt that this Federal activity will mean more widespread opportunities of service for all chemists, both within and without the Federal structure.

EXHIBIT No. 21

NEW YORK, N. Y.,
May 27, 1943.

Senator HARLEY M. KILGORE,
United States Senate,
Washington, D. C.

DEAR SENATOR KILGORE: I have your letter of May 13 requesting permission to use the speech made by me on April 26 or parts of it to enlist support for S. 702. You have my permission to do so and in addition I have secured permission of the Council of the Association of Consulting Chemists and Chemical Engineers for such use. The council however made it clear that my address is not to be assumed to represent the official viewpoint and stand of the association. In this connection it may be of interest to you to know that a mail vote was had of the opinions of the membership on the desirability of the objectives sought by S. 702, the desirablity of the present form of the bill, and the desirablity of extending the organization to be created into peacetime. The vote on the desirability of the objectives envisaged by the bill was approximately even. I consider this somewhat of a triumph (though you may not consider it so) as the attacks on the bill by the old-school type of industrially successful chemists have been very intense and venomous. The vote went very heavily against the

Digitized by Google

present form of the bill. This may be ascribed to the fact that the average citizen (technologist or otherwise) does not realize that the actual form of a bill is largely determined in a special language by skilled bill drafters who seek to avaoid common pitfalls in the phraseology of a bill and consequently arrive at a severe and terrifying formalism. The vote went also against extending the existence of the office into peacetime although the vote was not so heavy against that aspect of the bill.

The version of the speech which I sent you was prepared in advance of the delivery. In the actual delivery I made certain changes by means of pencilled notations and the revised form is enclosed herewith. It does not differ in essence from the copy previously sent you but it does contain some additional argument and I suggest that you destroy the copy you have on hand and replace it by the present copy.

I shall probably be in Washington between June 5 and 10 and I shall take the liberty of phoning your office to determine whether I can have a few moments of your time to discuss the bill.

Yours very truly,

ALBERT P. SACHS.

EXHIBIT No. 22

FRANKLIN TECHNICAL INSTITUTE,
Boston, Mass., July 20, 1943.

Senator H. M. KILGORE
United States Senate Office Building,
Washington, D. C.

MY DEAR SENATOR KILGORE: Since writing you on July 5 I have carefully gone over the Senate bill No. 702 and also parts 1 and 2 of the hearings.

I am very strong for States rights. I believe that this bill could in no way interfere with such privileges and should very definitely improve existing conditions. I am strongly in favor of it and hope that it will be passed. It hardly seems reasonable that some companies would make the agreements they have, which really in the end are not to their advantage.

Thanking you for bringing this to my attention, I am,

Sincerely yours,

B. K. THOROGOOD.

EXHIBIT No. 23

WESTVACO CHLORINE PRODUCTS CORPORATION,
New York, N. Y., June 7, 1943.

The Honorable HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

DEAR SENATOR KILGORE: I had the pleasure of hearing you speak recently before the New York meeting of the American Institute of Chemical Engineers with reference to your bill on technological mobilization, which is before the Senate Military Affairs Committee at the present time. Earlier you had been good enough to send me copies of the hearings on a parallel bill which was before the last Congress. I have taken the time necessary to read the record of these hearings and to generally familiarize myself with the subject matter and the possible implications of your current bill.

Let me say, as a preamble, that I am a chemical engineer by profession and have been engaged in chemical-engineering activities in the chemical industry for some 30 years, during which time I have had issued to me a reasonable number of patents on chemical subjects. Among my present duties is included the responsibility for directing the research and development activities of a large chemical company, in which activities substantial six-figure dollars are expended each year.

There can be no question but that "the full development and application of the Nation's scientific and technical resources are necessary for the effective prosecution of the war and for peacetime progress and prosperity" (sec. I, S. 702), but it is not believed that the impediments to proper technological progress, which your bill is intended to remove, actually exist.

As regards wartime technical activities, it appears to me—based on some very active and reasonably intimate experience—that the functioning of the

Digitized by Google

National Academy of Sciences in making available for consideration of any particular problem competent technical opinions on the most unselfish and intimate sort of a basis, has gone far to assure us that no important technical advance known to private industry is withheld from use in connection with the war effort. I know of no instance where competent men have refused to accept membership on appropriate National Academy of Sciences committees or where, after having accepted such membership, they did not freely and fully pass on information at their disposal. Furthermore, outside and apart from Academy endeavors, there is a constant informal cooperation among those engaged in the production or the development of articles needed for the war to the end that the information which each possesses is made available to all properly interested parties.

As regards technological progress in peacetime, I believe that there is no substitute for a proper competitive urge and for individual initiative in advancing our knowledge in technical fields. Experience leads me to feel that this comment holds true as definitely in pure research endeavors as it does in manufacturing and distribution.

I am convinced that the striving of many competent industrial managers for a desired goal is far more likely to result in steady technological advances than is the application of the God-like powers assigned to the Administrator provided for in your bill.

I do not find in the record of the hearings held on the companion bill during the last Gongress, any sound indication that monopolistic practices could be held responsible for having restrained technological progress. Frankly, it seemed to me that the testimony intended to develop such a case was confused, biased, and did not present any facts which bore out the contentions made.

Based upon my study of the subject—which I am willing to admit is not complete, but certainly is far more than a casual one—I am prepared to argue that passage of your bill will accomplish no desirable and useful purpose at this time. I regret that I cannot see eye to eye with you with reference to this matter, but believe that you desire to have a frank expression of opinion from those who have had occasion to study this general subject.

Very truly yours,

WESTVACO CHLORINE PRODUCTS CORPORATION,
M. Y. SEATON, *Executive Vice President.*

EXHIBIT No. 24

Mr. M. Y. SEATON,
Executive Vice President, Westvaco Chlorine Products Corporation,
New York, N. Y.

DEAR MR. SEATON: I have been very interested in your letter of recent date which I have held until there was sufficient time to give an answer which your commentary on the science mobilization bill requires.

I was prompted to introduce this bill from my work with the Truman committee in its investigations of the war program, as well as from my study of the findings of a number of other congressional committees, notably the Patents Committee. I will agree that there have been prodigious advances by industry in the war program, if measured by pre-war standards, but these committee findings point up the fact that this is not the full story. Certain factors in the structure of American economy have held back scientists and technological developments to a mere fraction of their actual potentialities.

These major impediments reside in the persistence of the pre-war policy of curtailment of production to maintain high prices and market control, the abuses in the patent system by certain monopolistic groups, the failure to utilize small plants, and the lack of centralized planning of the production program. Some of the Truman findings have been highlighted in the press and are undoubtedly familiar to you.

I would agree that the volumes of hearings on S. 702 now in print do not present a full delineation of the monopolistic practices prevalent in some quarters of industry. However, this premise of the bill is based largely on the findings of the Patents Committee which were introduced into our record by reference in testimony presented by Senator Bone on June 4. His committee conducted hearings during the last session of Congress, accumulating nine volumes which will appear in condensed form in the S. 702 record. I am enclosing two excerpts from the June 4 testimony which will interest you, and when the full text becomes

Digitized by Google

available, I will see that you receive copies. Senator Bone's citation of the monopoly control of cemented tungsten carbide (further testimony by Senator Bone, p. 2) is only one of many examples of this type of monopolistic practice that these investigations have brought to light.

In this same testimony Senator Bone's summary is very pertinent to this discussion:

"Mr. Chairman, I want to say that the control achieved through the cartel system is as near feudalism as anything could be devised in these modern times of ours. It was feudalism in a new dress. The control was airtight. Cartel members want stability and monopoly. The thing is essentially a negation of 'capitalism.' It will spell the end of classic and orthodox capitalism if it continues because, as I see capitalism, it is a system of free enterprise in which there is a free play of competitive forces. These gentlemen of the cartel world do not want 'capitalism.' They want 'monopoly' and it is business feudalism. They want one group to control through a vertical and horizontal trust, and that, sir, is not 'capitalism' * * * Free competition is passing away and we are, oddly enough at the moment when we hear much defense of the capitalist system, witnessing the commencement of its extinguishment. The blackout is coming about because stanch defenders of capitalism further the cause of the very creature they are bringing into being, the Frankenstein of monopoly which in itself invites the utter destruction of the capitalism. That is a fairly accurate portrayal of what is happening * * *."

Monopolies are still patterning their economic behavior after the pre-war idea of low production and high prices, and are resisting the competition of the small producers whose output would expand production to fit the needs of the war, lest it endanger their post-war controls of the markets. Their influence has been so strong that the Smaller War Plants Corporation, established under the Smaller War Plants Act in the summer of 1942 after pressure by the House and Senate Small Business Committees, has been a conspicuous failure. After 6 months of work, only $2,000,000 of the Small War Plants Corporation's capital of $150,000,000 had been loaned to small business, and only 234 out of 2,200 distressed companies who had provided a list of their facilities had received contracts. This was during a period when production in this country should have been at the peak.

Your observation on the National Academy of Sciences leads me to cite the Hixon-Miller experience, which you probably read in volume II, testimony on S. 2721, predecessor of the present bill. Ralph Miller, coinventor of the Hixon-Miller process for the production of aluminum from clay, appeared before the subcommittee on November 25 of last year. In his testimony Mr. Miller stated they started their attempts to introduce the new process early in 1941. He described their unsatisfactory experiences with the National Academy of Sciences committee, which rejected their process and said they later learned that Dr. Francis C. Frary, of the Aluminum Co. of America, and Mr. R. S. Sherwin, of the Reynolds Metal Corporation, were members of the National Academy of Sciences committee. Mr. Miller pointed out, "Some of the criticism (of the committee) was valid, some indicated the committee was not aware of the advances that have been made in materials of construction, and some indicated that the committee was making almost foolish objections * * *." From January 1941 until the November hearing they had made vain attempts to advance their process, trying unsuccessfully to confer with the National Academy of Sciences' committee members in an effort to obtain some constructive criticism. On contacting the Subcommittee on War Mobilization, Mr. Miller was advised to contact the Bureau of Mines. As a result of discussions there, laboratory work is now in progress there on the process. Mr. Miller and Mr. John J. Foley, treasurer and general manager of the Chemical Foundation, who appeared at the same hearing, deplored the fact that representatives of competing industries are members of the National Academy of Sciences. Mr. Foley stated:

"The perfect example is that in one instance (Mr.) Sherwin as a member of the subcommittee of the National Academy of Sciences is passing on the process we submitted to him and recommending that no pilot plant work be done on it. On the other hand, he is examining it as an executive of Reynolds Metal Co. and telling us that we are wrong on our costs. He can't tell us where we are wrong on them because we have not done pilot-plant work. In other words, you are asking the men who are actually engaged in the business to pass upon processes which may compete with their own processes * * *."

Again, there are countless examples of this repetition of an improper utilization of scientific and technical resources, facilities, and personnel in the war program.

Digitized by Google

The burden of the evidence that has come to my attention substantiates my conviction that an office of scientific and technical mobilization, as proposed by S. 702, would be a long step in effecting a more efficient prosecution of the war and in working toward post-war security.

Very sincerely yours,

H. M. KILGORE,
United States Senator.

EXHIBIT NO. 25

ABBOT A. HANKS, INC.,
San Francisco, Calif., June 4, 1943.

Hon. EDWIN C. JOHNSON,
Senator, Senate Office Building, Washington, D. C.

Re Kilgore bill, S. 702.

DEAR SIR: It is my wish that this letter be placed on record as a protest against Senate bill, S. 702.

This firm has been in technical scientific work since 1866 (77 years of continual business) and is alarmed over the breath-taking project as covered in this Kilgore bill. I cannot recall anything so astounding and discouraging to individual effort as is set down in the provisions of this bill. It would seem that the fundamental principles of the Government for protection, individuality, and resourcefulness are absolutely ignored, not only for this wartime period but also after peace is declared.

It has always been our endeavor to cooperate with our Government in all technical or scientific matters and we will hope to continue to do so, but we do not care for the tendency of recent years toward bureaucracy and the wide unnecessary expenditure of the funds of the people for such purposes.

Very truly yours,

ABBOT A. HANKS, INC.,
By HERBERT D. IMRIE,
President.

EXHIBIT NO. 26

JUNE 15, 1943.

MR. HERBERT D. IMRIE,
President, Abbot A. Hanks, Inc., San Francisco, Calif.

DEAR MR. IMRIE: I have discussed your letter of June 4 with Senator Kilgore, the author of this measure, and he informs me that it was one of his endeavors in introducing this bill to provide a method for more effectively assisting and awarding the individual inventor by making provision for possible Government assistance in the development of his invention. It may be that the legal language in which so much legislation is now couched has obscured this very simple objective he had in mind.

He would be glad, therefore, if you could tell him what you regard as the objectionable language and what provision you would regard as desirable to encourage invention and assist individual inventors who are now financially unable to promote their own developments.

As you request, your letter will be recorded as a protest against this bill.

Very sincerely,

EDWIN C. JOHNSON,
United States Senator.

EXHIBIT NO. 27

NEW YORK CITY, *May 12, 1943.*

Hon. H. M. KILGORE,
United States Senator for West Virginia,
Senate Office Building, Washington, D. C.

DEAR SENATOR: Referring to your kind favor dated April 23, I have been studying the science mobilization bill S. 702 and reading or hearing views for and against it. Since you ask for my comments and recommendations, I must say that, in my opinion, it is contrary to the best interests of our country, of science, of scientists, and of industry. I trust that it will be withdrawn or defeated.

Digitized by Google

While I do not question the high motives or ideals actuating those who support the bill, it places great power in the hands of a few appointees and subappointees, and this power might readily be misused, human nature and political considerations being what they actually are. This is the type of procedure which has brought Italy and Germany to what they now are. We must consider not only the wise use of power, but also the possibility, even probability, of its abuse. Governmental, private, and personal scientific agencies are now doing great and coordinated service for our Government in helping win this war, and I think that the existing agencies should be supported and helped, rather than merged into an over-all agency of such size and complexity as to be impracticable.

On inquiry, I find that the resolution of the American Association for the Advancement of Science, which you quote in your letter in favor of executive domination of science and scientists, was passed about 9 years ago in protest against an Executive order reducing by 50 percent the funds available for the National Bureau of Standards, the United States Geological Survey, and other bureaus of the Government. Please advise me if I am incorrectly informed.

In a brief note like this there is no room to discuss the question of small business, so-called. I may say, however, that there are many kinds of business that small (in a financial sense) men can enter only as stockholders, directly or through life insurance or other investing companies, or as employees, for the simple reason that large capital is essential to build and to operate plants—e. g., sugar refining, making iron and steel. Private consultants, like myself, are independent agents offering our services to help those who cannot afford research laboratories of their own.

I respectfully ask that this letter be included in the report of your next hearing on your bill S. 702.

Sincerely,

JEROME ALEXANDER.

EXHIBIT No. 28

JUNE 16, 1943.

Mr. JEROME ALEXANDER,
New York City.

DEAR MR. ALEXANDER: This will express my warm appreciation for your recent letter concerning the science mobilization bill, S. 702.

I regret your disapproval of the bill since I believe you have misinterpreted its intent. This bill does not intend that existing agencies be merged into one large group but rather that the proposed office serve as a planning and integrating group. This will facilitate rather than impede the work of the existing groups and would aid in further decentralizing their work.

While I do not know the full background of the A. A. A. S. resolution of 1934, I believe the statement it makes is very pertinent to our present condition. In this connection, I should like to report that a great many of the country's leading scientists have indicated their support in response to my letter of April 23. Since I am interested in all sides of the question I shall be glad to have your letter printed along with others.

I am convinced that only by the careful exploration of the various aspects of this bill by competent scientists can such legislation be made adequate and therefore would appreciate your continuing interest and cooperation.

Sincerely,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 29

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS.
Washington, D. C., June 16, 1943.

Hon. HARLEY M. KILGORE,
Senator, United States Senate Building,
Washington, D. C.

DEAR SENATOR KILGORE: Regarding H. R. 2100, a bill intended to mobilize the scientific and technical resources of the Nation, and to establish an Office of Scientific and Technical Mobilization, our organization and I personally are very much interested in this bill, and hope it shall have a successful conclusion.

Digitized by Google

As president of an organization with members in excess of 250,000 who are dependent mostly upon smaller businessmen and the farmer, we realize the necessity of protection to these classes of employers. We also have employers who are in the manufacturing business on a small scale. These employers are somewhat subservient to the larger manufacturers, who can withhold their raw materials from these small businessmen if they will to do so.

For your information, I am enclosing a letter written by a small manufacturer to Col. Robert W. Johnson, vice chairman of the War Production Ordnance Department, Washington, D. C. In this letter you will note that this small plant is competent and has in the past turned out manufactured goods necessary to prosecute our war effort.

In this particular plant men and women have been laid off due to the fact that raw materials could not be secured, while the larger steel companies still produced this manufactured article which could be diverted to the smaller plants.

We do not want to burden you with the lengthy statement, but this is just one of many similar situations in the United States.

Again hoping you have success with bill H. R. 2100, I remain,

Yours truly,

E. J. BROWN. *International President.*

EXHIBIT No. 30

JUNE 25, 1943.

Mr. E. J. BROWN,
International President, International Brotherhood of Electrical Workers, Washington. D. C.

DEAR MR. BROWN: I am keenly interested in your letter of June 16 in support of S. 702, the science mobilization bill, and H. R. 2100, the companion bill in the House.

It was my intention in introducing the bill to aid small business to the fullest extent. The proposed Office of Scientific and Technical Mobilization would aid this group, I believe, similarly to the way private industry is now aided by private laboratories. Testimony presented to the subcommittee currently studying S. 702 indicates that shortages of many vital materials, production delays, cutbacks, and admitted errors in the progress of the war have been largely due, in many cases, to the lack of efficient planning, and an improper utilization of our scientific and technical resources and personnel. It is my hope to see small business given the fullest opportunity to contribute to the winning of the war and in coping with post-war problems.

I would very much like to see the letter from the small manufacturer to Col. Robert W. Johnson, vice chairman of the War Production Ordnance Department, which apparently was not enclosed with your letter.

I am warmly appreciative of the support of the brotherhood in working for the enactment of S. 702, and am taking the liberty of printing your letter in the record.

If you would care to testify personally before the subcommittee, I should be very glad to arrange it.

I invite your continuing support of the proposed legislation, which is vital to small business as well as to the public interest in general.

Very sincerely,

H. M. KILGORE, *United States Senator.*

EXHIBIT No. 31

CHAMBER OF COMMERCE,
Petoskey, Mich., April 30, 1943.

Hon. H. M. KILGORE,
United States Senator, District of West Virginia, Washington, D. C.

MY DEAR SIR: We are in receipt of the mimeographed copy of the information given by Finley Tynes, secretary of the Chamber of Commerce of Staunton and Augusta Counties of your home State, before the Military Affairs Committee on the matter of science mobilization.

The opinions expressed by Mr. Tynes are likewise those of our organization and we are so advising him.

Digitized by Google

During the past 6 years we have been experiencing the development of a new cash crop which will vitally affect the lean agricultural advantages of this region, devoted for the past 60 years to the summer resort business. The item has just recently been recognized by the Navy Department as a matter of war necessity as well as a post-war need. Further recognition and assistance on the part of the Department of Agriculture and financial agencies will be needed.

Of course, those who have fostered the program can dispose of their patents, methods, etc., to larger companies, who in turn will take it off the market or move the seat of operations to some field far distant from the one for which it was originally planned, * * * and the efforts of organizations such as the chamber of commerce lost as far as benefiting their communties are concerned.

We trust that as chairman of the committee charged with investigating and recommending such development, that every effort will be made to create a research program closely allied with the smaller communties.

Very truly yours,

WILSON J. MCDONALD, *Secretary.*

EXHIBIT No. 32

UNIVERSITY OF PENNSYLVANIA,
Philadelphia, May 5, 1943.

The Honorable H. M. KILGORE,
The United States Senate, Washington, D. C.

DEAR SIR: Thank you for sending me a copy of the science mobilization bill and for asking my comment about it. Naturally all scientific workers in the United States are interested, both in the use that can be made of science in winning the war and the preservation of science and scientific effort. Scientific progress is accomplished by scientific workers and there is not an inexhaustible store of such workers. What seems to me most important is to preserve the workers we have and not to let them be used carelessly in the war effort. Everyone who understands the history of science knows that often discoveries which appear to have no practical benefit often in very short time become of great significance. We have had an example recently in the case of vitamin K. When it was discovered just a few years ago it seemed to be a vitamin only of importance for some kinds of birds. Now the vitamin is widely used in clinical medicine.

During the past few months, in the course of preparation of a book, I have found it necessary to follow scientific progress in Axis countries. This is being done through the study of microfilm copies of Axis publications obtained presumably through neutral countries. I am impressed with the fact that pure science seems to have made real progress in these countries, even as late as 1942. Here in America there has been little willingness on the part of the draft boards to exempt scientific workers. Sometimes these workers find a useful place in the war effort; in other instances their scientific training is not made use of at all. If your bill can make it possible for scientific workers to continue their efforts, even though these efforts may not be of immediately practical benefit, I should be very happy. At the present time the science of physiology, which is my specialty, has been rather seriously disrupted and retarded by the war effort. I am not sure that this is wise.

I hope that you will not misconstrue my motives in writing this letter. Twenty-six years ago I left my scientific work to enlist in the air service and I served 2 years in this branch of the Army. The experience was valuable, and, of course, interesting, but not very profitable scientifically.

Yours very truly,

L. V. HEILBRUNN,
Associate Professor of Zoology.

EXHIBIT No. 33

WESTERN RESERVE UNIVERSITY,
Cleveland, Ohio, April 26, 1943.

The Honorable H. M. KILGORE,
United States Senate, Committee on Military Affairs,
Washington, D. C.

DEAR SIR: Acknowledging receipt of your letter of April 23 with reference to science mobilization bill (S. 702, H. R. 2100), I wish to advise that such a bill

Digitized by Google

should receive the enthusiastic support of all forward-thinking progressive Americans. Clearly, it relates in no way to politics and certainly will help to advance prosperity in our country. I am in hearty accord with the major provisions of this bill and see no reason why it will not work to the ultimate benefit of all true Americans. Accordingly, I trust that you will do all you can to foster and secure its eventual enactment.

Cordially yours,

J. PAUL VISSCHER,
Professor of Biology, Western Reserve University.

EXHIBIT No. 34

STANFORD UNIVERSITY,
Stanford University, Calif., May 11, 1943.

Senator H. M. KILGORE,
Committee on Military Affairs, United States Senate,
Senate Office Building, Washington, D. C.

DEAR SENATOR KILGORE: I am very anxious to go on record as favoring bill S. 702. It seems to me it is high time for the Government to take an interest in the progress of science. However, I am not in favor of section 4 (1) which considers a system of merit awards. I cannot see why the Federal Government should handle matters of this sort.

Very truly yours,

PAUL R. FARNSWORTH,
Acting Executive Head.

EXHIBIT No. 35

HARVARD UNIVERSITY,
Cambridge, Mass., April 30, 1943.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

MY DEAR SENATOR KILGORE: I am heartily in accord with your science mobilization bill (S. 702, H. R. 2100) and trust that it will receive favorable action.

My only question is whether there are safeguards for existing agencies such as the Office of Scientific Research and Development and the National Defense Research Committee. I hope there will be no new competing bodies that will obscure and duplicate function. After the Civil War we were left with the National Academy; after the World War we were left with the National Research Council. The present war has produced the Office of Scientific Research and Development and the National Defense Research Committee. To create a yet new and separate body would seem wasteful indeed; therefore, I trust that the acceptance of your bill will clearly indicate the relationship between the proposed Office of Scientific and Technical Mobilization and existing agencies.

With my congratulations for your splendid proposal, I am

Sincerely yours,

GORDON W. ALLPORT,
Chairman, Department of Psychology.

EXHIBIT No. 36

MAY 28, 1943.

Mr. GORDON W. ALLPORT,
Chairman, Department of Psychology,
Harvard University, Cambridge, Mass.

MY DEAR MR. ALLPORT: Thank you for your good letter of April 30 on S. 702.

Answering your question about Office of Scientific Research and Development and National Defense Research Committee, the only agency transferred, as the bill is now written, is the National Roster of Scientific and Specialized Personnel, now a part of the War Manpower Commission. The present work of Office of Scientific Research and Development and National Defense Research Committee would be coordinated with the work of other agencies, but their activities would continue and be assisted where possible, not disturbed.

Digitized by Google

I hope you will give this measure your active support in order to insure its early passage.

Very sincerely yours,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 37

CLARK UNIVERSITY,
Worcester, Mass., April 27, 1943.

Senator H. M. KILGORE,
Committee on Military Affairs, United States Senate,
Washington, D. C.

DEAR SENATOR KILGORE: This is to acknowledge your letter of April 23 and its enclosures concerning the science mobilization bill.

With the purposes of the proposed bill I am, as a scientist intensely interested in furthering the war effort, very much in agreement. The general plan of organization of the proposed office seems satisfactory although I believe that two additional requirements or provisions should be included. These are: (1) That the administrator should be a bona fide scientist of high repute, and (2) that the board or its committee be authorized to appoint advisory subcommittees of experts to assist and advise them in their deliberations. The requirement of a scientist as administrator seems to me to be absolutely essential since it is precisely with scientific matters that he is to deal. The need of appropriate subcommittees is obvious in view of the extraordinary degree of specialization in science.

The one large defect of the bill appears to me to be the lack of any provision for rapidly effective liaison between the office and the armed forces. Only in section 8 (b) is a joint committee authorized and this is apparently to be concerned only with the question of secrecy and restriction of information. Having had some experience in just this field, let me cite an instance as an example of the point. Last fall our laboratory completed certain phases of an investigation of the fatigue of airplane pilots under a project sponsored by the Office of Emergency Management, the Civil Aeronautics Administration, and the United States Navy. We gathered objective scientific evidence indicating that we had discovered a specific substance, that could be taken by mouth, which could increase the efficiency of pilots by some 20 to 30 percent and which raised their ability to respond to emergencies by some 50 percent. This material acted not as a momentary drug stimulant, but was effective continuously and with no adverse side effects whatsoever. Tests were performed with United States Army pilots. Reports were submitted to various interested agencies and specifically there was forwarded to the Office of the Air Surgeon General a proposal to initiate certain field studies. This proposal still gathers dust in Washington, despite the fact that the added efficiency that might be obtained should be equivalent to adding 20 to 30 percent to our air personnel and by its especial advantage in emergencies might materially aid certain combat maneuvers, reducing landing accidents, etc. In the inerim the Royal Air Force has taken the matter up and will repeat our investigation in the field. I am not citing this to plead for this particular research, but to indicate to you that unless scientific findings are acted upon by the armed forces or other branches of the war effort they might as well not be done at all.

What is requisite, it seems to me, is a committee like that described in section 8 (b) (and a similar liaison committee with appropriate branches of industry and agriculture), whose duty it shall be to report on the usefulness for the war effort of any scientific discovery presented to it by the board. Furthermore, it should be provided that this report be made speedily, that it include specific criticism and suggestion. I should like to have it mandatory that such a liaison committee be permitted to refrain from reporting on any single project for no longer than 3 months, except by special permission of the board.

Another defect of the bill again appears to me to involve this matter of coordination with the armed forces. The latter have their own research institutions. The findings of such institutions should, it seems to me, be made available to the board so that it may offer suggestion, criticism, and advice. An Army laboratory, for example, might develop an antiaircraft device to a certain point. The board might have information of a correlated finding not especially useful in itself but

Digitized by Google

critical for the successful completion of the Army project. It cannot offer such information if it des not know what the Army is doing.

May I repeat that your bill seems most desirable.

Sincerely yours,

Dr. GREGORY PINCUS,
Professor of Experimental Zoology.

EXHIBIT No. 38

SWARTHMORE COLLEGE,
Swarthmore, Pa., April 27, 1943.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: I am greatly obliged to you for your letter of the 23d, which accompanied a copy of the science mobilization bill. Having read the bill, as well as the résumé, I feel very strongly that its passage and application would contribute in an important way to the effective utilization of our scientific resources, during and after the war.

In response to your request for comments, I submit the following observations:

(1) It would be desirable if something could be added to section 4 of the bill, to suggest cooperation with the scientific societies of the country. The office would operate more effectively, in my judgment, if instead of lumping together all scientific activities, as provided for in paragraphs (a), (f), and (g), it would maintain close relations with the societies, which exist in the various fields of science, so as to operate to a large extent through them, particularly in the matter of relations with the scientific work of other countries. Information would in this way be better organized, more readily available, and thus more useful.

(2) It would seem highly desirable that an official of the National Academy of Sciences be specifically mentioned in section 3, paragraph (d), as one of the members of the technical committee. Perhaps an even closer tie-up with the National Academy, through its National Research Council, would be valuable.

(3) The emphasis upon international collaboration in paragraph (g) of section 4 seems to me an excellent feature of the bill.

I am very favorably impressed by the plan and spirit of this bill; its introduction seems to me a very encouraging occurrence. It is hardly necessary for me to add that I shall follow its fate with great interest, that I shall be glad to be called upon for such service as I can render in connection with the problems which it raises, and that I shall appreciate the receipt of your further communications concerning it.

Yours sincerely,

ARNOLD DRESDEN.

EXHIBIT No. 39

UNIVERSITY OF CALIFORNIA,
Berkeley, Calif., May 11, 1943.

Senator H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: In general I am not enthusiastic about schemes for the organization of scientific research, although in certain cases such organization has its evident advantages. The proposed bill, however, of which you were good enough to send me a copy, meets with my very hearty approval. It is high time that efforts along the lines contemplated were undertaken if we are to utilize our resources of talent and material in ways most effective toward winning the war. We have first of all a single definite and practical aim to be realized in the near future. We want to know at once what are the problems most urgently calling for speedy solution. What defects, for instance, are there in fighting planes, bombers, tanks, guns, and other fighting equipment? In this war, as in World War I, invention counters invention: better tanks or better antitank guns to cope with the enemy's improved equipment, and so on along the line. With our Yankee inventive ingenuity and our facilities for production we can play the game of competitive inventiveness as well as the Germans and much better than the Italians or Japs. This is a war in which the battle of wits devoted to the discovery of improved methods of attack and defense will play an important, if not decisive part. That is why I am so strong for the proposed bill.

Digitized by Google

We should obtain from the individuals actually engaged in conflict all the information possible concerning any improvements of fighting equipment, the procedures for coping with disease, or any other problems whose solution would conduce to the success of their efforts. It would be desirable to have these sources of information circularized so far as possible and as soon as possible to learn more of their needs. We should have this information in the hands of those who are most likely to be able to solve the problems, and to this end we should know all about the special aptitudes of all of our scientific investigators and be able to enlist quickly the services of those best qualified to solve the problems in question. There is no doubt that there would be widespread and willing response to calls of this kind. The need of centralized organization for success in competitive inventiveness is quite comparable to the need for centralized control of military operations in the field.

A great and well organized central clearing house for information on specific needs and on all matters relevant to the prosecution of the war and the maintenance of effectiveness on the home front cannot fail to be of paramount service in the present crisis. Finally, I might suggest the creation of a department or committee on facilitation, whose function would be to avoid delays, eliminate red tape, and in general to get rid of the waste of time which is so frequently involved on operations of governmental machinery.

Hoping that so deserving a measure as S. 702 will be quickly passed and put into operation, I am

Very sincerely yours,

S. J. HOLMES.

EXHIBIT No. 40

THE UNIVERSITY OF NORTH CAROLINA,
Chapel Hill, N. C., April 30, 1943.

Senator H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SIR: I appreciated very much the preview of your bill (S. 702; H. R. 2100) introduced in the Senate of the United States by you.

I agree with you that science should serve society in some constructive way after the present war effort, and that the future of science and its support must be faced by government as you have suggested in your science mobilization bill.

Evidence that "serious impediments" to the full application of science in our war effort do in fact exist, can be shown by the lack of such activity by as much as 50 percent of my colleagues in the southeastern part of our country.

There is no general clearing house for war problems that can be submitted to the various scientific organizations of our colleges. We are supposed to take the initiative. The initiative to do what? seems to be the cry. We don't know the Army's problems nor the Navy's desires for information, yet we are all anxious to help, especially those of us beyond military age.

I am convinced your bill is the solution. Some who attack this bill on the basis of "regimentation" of science and technology need only review the history of our Public Health Service, our civil aeronautics, and similar services performed by Government to prove how wrong they are.

Several years ago, when our Government first recognized that our entry into the war was unavoidable, it was assumed that the research that would be needed or used in this war was all done, and that the war would be fought with what we had. They thought the same about industrial capacity and designs of planes. Since we can't predict the length of the war, the time available for research to improve the implements of war is also unpredictable.

If the war is long, there arises a vital need for not only continuing research and development but augmenting it in the near future. Without some sort of basic clearing house, as you propose, we may be placed in the position of giving the enemy the initiative and finding from enemy sources what we should have had developed beforehand.

In reviewing the bill I would like to raise the following questions, in the spirit of constructive criticism:

Page 4 (1): What is a qualified person?

Page 4 (14): Does this overlap the functions of the Bureau of Standards?

Page 5 (17): One year should be chosen. Less than 1 year is not enough to evaluate the ability of a potentially able young scientific interested person. In 6 months, only the bare ideas of a subject can be used to introduce the budding young scientist to his major field of endeavor.

Digitized by Google

Page 6 (9): $12,000 not enough salary for the ablest man.

Page 7 (1): The branch office should be a salaried position with title "assistant director" or some such designation.

Page 7 (12, 13, 14): My reaction to this make-up of the board is "it is unbalanced." There should be more scientifically trained men on the board at least one each in the biological, physical, and engineering sciences.

Page 8 (22): This seems to overlap the functions of the Smithsonian Institution and similar museums?

Page 9 (9): Word "impact" not used correctly. Do you mean "effect"?

Page 19 (5) Should the words "data and" follow word "technical" at end of line?

I am taking the liberty of writing to Senator Robert Reynolds (North Carolina), the chairman of your Committee on Military Affairs, to urge him to support this bill, on its merits in accelerating our war efforts.

In appreciation of your interest in allowing me to preview it, allow me to remain

Very truly yours,

OTTO STUHLMAN,
Professor of Physics.

EXHIBIT NO. 41

WESTERN RESERVE UNIVERSITY,
Cleveland, Ohio, April 27, 1943.

Hon. HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

MY DEAR SENATOR: I have your communication of April 17 on the subject of the science mobilization bills (S. 702 and H. R. 2100).

I am glad that the questions involved in these bills are to receive the attention which they deserve, and I shall do what I may to promote interest in them.

I would venture to point out, however, that in my judgment the bill is so drawn as to define too narrowly the terms "scientific" and "technical." The matter of fact is that such scientific and technical fields as engineering, veterinary training, dentistry, medicine, physics, and chemistry are now fairly well, though inadequately, protected from disorganization as a result of the war effort.

On the other hand such other fields as scientific pharmacy, meteorology, and the whole field of the social sciences, particularly economics, sociology, and government, together with statistics in these fields, are left altogether exposed to the disintegrating effects of our selective service acts.

I think that there is no difference of opinion among educational administrators that the fields to which I refer are in immediate need of attention. Even now the civilian branches of the Government, as well as the armed forces, are finding it extremely difficult to secure trained personnel in these specialties. Business administration, too, and advanced accounting are suffering heavily from the war demands made upon their personnel.

I do not wish to go into further detail, but I do think that it is important to call to your attention the necessity of not confining "scientific" and "technical" to the fields more commonly associated with these terms.

Sincerely yours,

W. G. LEUTNER, *President.*

EXHIBIT NO. 42

MAY 25, 1943.

Mr. W. G. LEUTNER,
President, Western Reserve University,
Cleveland, Ohio.

MY DEAR MR. LEUTNER: Thank you for your fine letter of April 27 on S. 702. I am sorry that illness has prevented my answering it sooner.

Please note that the text of the bill, as now written, defines scientific and technical personnel as "all persons, excepting physicians and dentists" in all of the physical sciences.

Your support of this bill is ineed heartening, and I hope you will use all possible active means to insure its early passage.

Very sincerely yours,

H. M. KILGORE,
United States Senator.

Digitized by Google

EXHIBIT No. 43

WESTERN RESERVE UNIVERSITY,
Cleveland, Ohio, June 2, 1943.

Hon. H. M. KILGORE,
Senate Office Building, Washington, D. C.

MY DEAR SENATOR: I regret that you have been ill but hope that you are now fully restored.

I would certainly make it a point in connection with bill S. 702 that it would be a mistake to confine the provisions of the bill to the physical sciences. My reason for this is that we are being urged by the Government now to undertake the training of men and women in the field of economics and social welfare, in order to prepare for the necessary service in those areas as soon as the occupation of conquered territories begins.

After the war, also, large numbers of such trained people will be necessary. I hope that some consideration may be given to those problems.

Sincerely yours,

W. G. LEUTNER, *President.*

EXHIBIT No. 44

JUNE 11, 1943.

Mr. W. G. LEUTNER,
President, Western Reserve University,
Cleveland, Ohio.

MY DEAR MR. LEUTNER: Thank you for your letter of June 2 giving me the benefit of your thinking on the science mobilization bill, S. 702.

This whole question of incorporating the social sciences into the provisions of the bill interests me profoundly, and I can assure you that your suggestion will be taken into account. No decisions have been made yet on this, and I am grateful to you for pointing up the necessity to keep the role of the social sciences in mind. I agree with you that there is a major contribution that persons trained in social welfare can make in areas occupied following military victories.

Cordially yours,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 45

UNIVERSITY OF MICHIGAN,
Ann Arbor, Mich., May 13, 1943.

Senator H. M. KILGORE,
Committee on Military Affairs,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: I have read the science mobilization bill with interest and have tried to give it my careful consideration.

I feel very strongly that the scientific and technical development in this country should be supported by a strong permanent Department of Science which is on an equal footing with the other important governmental departments. The science mobilization bill may be a step toward the creation of such a department and, if so, I am heartily in favor of it. I am a little troubled, however, in thinking that it may only set up just another agency which is no more powerful or comprehensive than those now in existence.

The Office of Scientific Research and Development has already done quite well in mobilizing scientific personnel. In fact, it seems to me that there are not many first-class physicists who are not now employed on war projects.

Finally, I would like to point out that no organization can be better than the men who compose it. The proposed Office of Scientific and Technical Mobilization will only be successful if you can secure the services of capable men with sound scientific background. I wish to thank you for giving me the opportunity to read and comment on the science mobilization bill.

Yours sincerely,

DAVID M. DENNISON,
Professor of Physics.

Digitized by Google

EXHIBIT No. 46

WILBERFORCE UNIVERSITY,
Wiberforce, Ohio, April 26, 1943.

Senator H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: I have received your letter containing the science mobilization bill which has been introduced into the Seventy-eighth Congress. I am deeply interested in it and would like very much to see it passed by the Congress. We need the organization of our scientific manpower under some centralized authority, both for the purposes of war and those of peace. I shall endeavor to interest some of the Representatives from our State in supporting this bill.

With the hope that the bill may pass and that your own efforts in the field of education may have continued good results, I am,

Sincerely yours,

CHARLES H. WESLEY, *President.*

EXHIBIT No. 47

ALFRED UNIVERSITY,
Alfred, N. Y., April 28, 1943.

Senator H. M. KILGORE,
United States Senate, Washington, D. C.

MY DEAR SENATOR KILGORE: Your communication of the 17th about the science mobilization bill is very interesting to me. The importance of research work in the Nation's educational institutions to the national welfare is known to all. It is true also that it is disintegrating in the presence of the war emergency. Specific research is being pushed at the expense of fundamental research. Any plan like that proposed in the bill is sure to be helpful.

At Alfred University we have the two colleges, the College of Liberal Arts and the New York State College of Ceramics. In the latter a strong ceramic experiment station is maintained by the State and by industry. This, however, so far has shown no bad effects from the war. Some of the research in the Liberal Arts College has been affected, but not too seriously.

I trust that your efforts will prove fruitful and that the bill will pass.

Very sincerely yours,

J. NELSON NORWOOD, *President.*

EXHIBIT No. 48

AMERICAN COUNCIL OF COMMERCIAL LABORATORIES,
June 1, 1943.

The Honorable HARLEY M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: This council, composed of a group of the better known tax paying testing laboratories of the United States, has considered the provisions of S. 702, and has directed me to file a protest against it, and to request that this letter be placed in the record of the hearings in connection with this bill.

First of all, this measure seems to completely ignore the present excellent cooperation amongst scientific technical bodies which are and always have been at the service of government, and which have cooperated thoroughly with the armed forces in the present emergency.

The potential harm to industrial research and scientific investigation contained in this bill lies not so much with the aims expressed, but with those possibilities which are hidden and which undoubtedly will result in the assumption of authority on the part of expanding bureaucracy which this bill creates.

Those who are spending millions of their hard-earned money in the development of processes and in the study of further application of scientific knowledge to the solving of problems of manufacture and production, are completely floored with the thought that this bill provides the means by which the results of their research can be taken away from them and made available to the public at large.

The inventor who, under the Constitution, has heretofore had protection for his brainchild in that he had the exclusive right to the fruits of his industry,

Digitized by Google

is standing aghast when faced with the thought that this protection is now about to be lost to him. He resents the peacetime regimentation which the bill provides.

Inventors and research investigators are responsible for much of the progress that industry has made in the last 100 years. Their incentive to produce has been the profit motive. If the incentive is lacking, as will undoubtedly be the case if the provisions of this bill are forced on the public, I doubt if these people will consider the field of investigation so worth while.

I know of no proposals so far taken more calculated to discourage inventors from spending their money and time or to discourage industrialists from appropriating the large sums necessary for research and study in their laboratories, than the machinery this bill seems to offer to take away the results of their efforts from those who develop new ideas and new processes.

The scientifically minded people of America do not object to anything in wartime which tends to free secrets, inventions, processes, or anything else that will help our armed forces, but they do object, and rightly so, to having the totalitarian form of control over their efforts extend into peacetime, made possible under the provisions of this bill.

A small minority once sought to legislate the drinking habits of the Nation. It was a miserable failure. This bill seeks to control and to regiment the thinking capacity of the scientists. If this bill is enacted into law I predict an equally miserable failure.

In our opinion this bill is a socialistic piece of legislation. It does not take into consideration the true situation regarding the cooperation of technically trained people and their willingness to help in this war emergency. It should be sterilized lest it do incalculable harm to the very thing that has made America supreme under a system of free enterprise.

Yours very truly,

A. R. ELLIS, *President.*

EXHIBIT No. 49

JUNE 25, 1943.

Mr. A. R. ELLIS,
President, American Council of Commercial Laboratories.
Pittsburgh, Pa.

MY DEAR MR. ELLIS: This will express my warm appreciation for your letter of June 1, concerning the science-mobilization bill, S. 702.

Our subcommittee recognizes and is proud of the very excellent cooperation and service which the scientific and technical men of the country are now rendering in behalf of the war effort, and we would agree with you completely in your observation.

However, the inadequacies of existing Government organizations have given rise to conditions which our bill seeks to correct. We have not yet achieved the full participation of scientists and technologists throughout the country in the war program, although these groups have exhibited a desire to give maximum service. For example, the National Roster of Scientific and Technical Personnel lists less than one-third of those available.

Also, we are not taking advantage of the inventive genius of America, as is shown by the relatively small percentage of wartime inventions that are actually applied. In testimony submitted to our subcommittee, it was pointed out that of 1,200 suggestions recommended to the Ordnance Department by the National Council of Inventors, only 4 had been developed. The weakness here seems to be that the council does not have facilities for testing ideas and inventions on a large scale, nor does any branch of the Government. S. 702 would provide the means of utilizing the benefits that accrue from such suggestions as these.

Since patent features of the bill apply only to patents developed by the Government, or through the use of Government funds, the private patents will not be affected by our bill. In fact, because of the provision for the reward to inventors for their work, I believe inventions will be stimulated rather than retarded.

In answer to your observations, may I further point out that in a survey conducted by the National Resources Committee of the most important inventions in the last 50 years, it was found that there was an average of 33 years between the date of conception and the date of commercial success. This report showed that the vast majority of inventors get a small return from his patent.

Digitized by Google

The reward provision of S. 702 would provide compensation for many men who have not benefited from their work.

You express a fear that there is "potential harm to industrial research and scientific inventions contained in this bill." If this were true, it does not seem likely that men such as Henry J. Kaiser, William M. Jeffers, Donald Nelson, and the late Edsel Ford—to list a few—men who have been instrumental in furthering such research, would approve the bill as they have done.

I will, of course, be glad to have your testimony against the bill put on record; however, I would suggest instead that you submit a section-by-section analysis, giving the facts that prompt your group to oppose this legislation. Otherwise, your letter will be recorded, as you request.

Cordially yours,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 50

UNIVERSITY OF MINNESOTA,
Minneapolis, May 4, 1943.

The Honorable H. M. KILGORE,
Senator of West Virginia,
United States Senate, Washington, D. C.

DEAR SIR: I wish to thank you sincerely for your letter of April 23 for the copy of your bill proposing to mobilize the scientific and technical resources of the Nation, etc., and for the brief résumé of this bill.

I greatly appreciate the opportunity which you have given me to comment on this bill.

Many scientists have felt for years that they could contribute materially to the welfare of the Nation if a Government agency were created which would make use of the knowledge and initiative of leading scientists in the further scientific exploitation of our national resources. It is true that certain Government agencies exist, like the United States Bureau of Standards, but their assignments are of a limited nature. Your proposed bill creates the opportunity of making a much more general use, by the Government, of scientists in war and peacetime. It is gratifying to note that your bill recognizes the contributions which scientists are eager to make in the further industrial and agricultural development of the country.

Subject to a few minor considerations, which are given below, I believe that passage of your bill would mark a milestone in Government leadership.

Private industrial concerns have recognized for a long time that the success of their companies depends mainly upon the quality of their research staffs.

Although a small percentage of the profits of the companies is invested in research laboratories, experience over a long period of years has taught that such investments have yielded rich returns. It is not accidental that prominent companies like the General Electric, Bell Telephone, Westinghouse, du Pont, etc., excel in the standing and leadership of their research staffs.

If the Nation at large is going to profit more from the results of scientific research, the Government should recognize the significance of research by allotting grants for this purpose. This could best be done in cooperation with graduate schools of leading universities and colleges, by the establishment of Federal research fellowships. At present, postgraduate research is mainly supported by private organizations, like the Rockefeller Foundation, the Carnegie Corporation, etc. Without underestimating the beneficial and important results of this support, it seems appropriate and desirable that the Government recognize the national importance of fundamental research.

I believe that it would be desirable to stress this point more specifically in your bill, and to add a clause to section I, e. g., as follows: "(13) To promote fundamental research in leading universities and colleges by the assignment of grants-in-aid of research."

I also believe that in another respect, valuable cooperation with universities and colleges could be attained. The many new theoretical and practical discoveries in the natural sciences are difficult to follow and digest, even by leaders in research in universities. It is hardly possible for those graduates who have left the university, and who are engaged in industrial, or other nonacademic

Digitized by Google

research, to keep acquainted with the progress of the sciences. It would be desirable to have offered by universities concise courses covering the progress of the various sciences during the last decade or so. It is, therefore, suggested to add the following clause to section I of your bill: "(14) To support and encourage universities and colleges in the presentation of comprehensive courses for postgraduates, and other interested parties. These courses should cover the recent progress in the various fields of the sciences."

Furthermore, I believe that one more clause could be added to section I: "(15) To assist civilian defense organizations in making available all scientific information which is of importance in connection with the protection of the civilian population in a period of war."

It is gratifying to read on page 8, "Powers of the Office," that the Office shall vest with several powers and duties. However, from sections 5 and 6, it appears that all the powers are vested with the Administrator of the Office of Scientific and Technical Mobilization. Other powers vested with the Administrator are mentioned on page 6 of the bill.

Evidently, the six other members of the Board serve only in an advisory capacity.

The proposal to vest all powers with the Administrator instead of with the Board is most undemocratic. You are urged to reconsider this section, and other sections mentioned dealing with "powers," and to vest all powers with the Board instead of with the Administrator. With the present proposal, I am afraid that no self-respecting scientist would consider becoming a member of the Board.

Yours very sincerely,

I. M. KOLTHOFF,
Professor and Head, Division of Analytical Chemistry.

EXHIBIT No. 51

MAY 24, 1943.

Prof. I. M. KOLTHOFF,
Professor and Head, Division of Analytical Chemistry,
University of Minnesota, Minneapolis, Minn.

DEAR PROFESSOR KOLTHOFF: This will express my warm appreciation for your very fine letter of May 4 concerning the science mobilization bill, S. 702.

It is very helpful to have such constructive suggestions as you have made and also very encouraging to receive your support. I recognize that no adequate proposal on the subject of the integration of our scientific efforts could be made to Congress without the active participation of our leading scientific people. And this was my main reason for writing to you.

I am in full accord with all the suggested improvements which you have made and assure you they will receive full consideration by our subcommittee. However, by way of explanation, I would like to comment briefly on the powers vested in the Administrator. In considering the position of the Administrator in the proposed Office the authors of the bill felt that in the centralization of authority, it was necessary to provide for sufficient freedom of action under which the Administrator might operate and, at the same time, some reasonable check to prevent the abuse of this authority. This check, we feel ,is provided for by—

1. Having the Board representative of the total economy.
2. Having the Board selected by the President.
3. Providing that the Board "shall have access to all the information of the office relating to the administration thereof."

It was our belief that this represents a reasonable compromise and that the Board will be in a position to "smoke out" to the President any unfavorable action of the Administrator.

I hope you will feel free to make any further recommendations as you may feel desirable and that I may count on your continuing support and interest.

Sincerely,

H. M. KILGORE,
United States Senator.

Digitized by Google

EXHIBIT No. 52

BOEING AIRCRAFT CO.,
Seattle, Wash., June 28, 1943.

Subject: S. 702.

Senator HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

DEAR SENATOR KILGORE: In the past few days, I have had the opportunity to study a copy of S. 702, and should like to offer a few comments regarding this bill.

The general purposes of this measure are stated to be the mobilization of scientific and technical resources of the Nation, and to encourage and protect the research and enterprise of inventors, scientists, and technicians. These broad purposes are supplemented by others, including the appraisal and coordination of facilities and personnel, the discovery and development of substitute materials, contribution of assistance to industry, and similar objects.

That these objects, in general, are desirable seems fairly evident. The questions which arise are whether or not our present system is adequate and if not, whether the provisions of the bill are such as to achieve the objects stated.

As defined by section 2a of this bill, scientific and technical facilities include virtually every form of property (in the word's broadest sense) which is connected in any way whatever with scientific or technical work. "Technical" is a broad term, and under the definition set up, scientific and technical facilities would include not only facilities devoted to pure research, but virtually every factory, from the largest to the smallest, and even the crossroads garage, which certainly is used for "technical" purposes, and likewise would include every process, method, technique, etc., used in any branch of our industry. Thus, it seems that "scientific and technical facilities" would include virtually our entire industrial machine, regardless of its ownership. "Scientific and technical personnel" is likewise broadly defined and would include every scientist, engineer, physicist, and even every skilled mechanic in the Nation today.

Under the provisions of section 4 (b), the Office of Scientific and Technical Mobilization would not only be able to formulate and direct development, but also would be empowered to initiate and carry out projects for the use of technical facilities (Section 4b). Thus the Office would be empowered not only to engage in research, as does, for example, the National Advisory Committee for Aeronautics at present, but also to place the results of such research into use. Conceivably, the Office would be empowered to enter into the manufacture of aircraft, or any other article of commerce, in competition with private industry. While it is entirely possible that such a result was not contemplated in the drawing of the bill, the result obviously could be achieved within the provisions of the measure, for not only is the power given to initiate and carry on such projects, but also the Office is given power to form corporations in order to carry out its powers (sec. 9b), make contracts, acquire property, etc. (sec. 4j).

The powers granted the Office by section 4 (b), mentioned above, seem very broad, especially when coupled with other provisions of the bill. Under section 4a, for example, the Office would have available complete information regarding all scientific and technical facilities and personnel. Thus the Office would be in a powerful position, able to compete with private research and industry on terms which would be disastrous to private enterprise. True, the Office would also have the power to make such information available to industry (sec. 4h), but only upon request, and the Office is not required to so distribute information.

With the apparent purpose of obtaining patent rights to assist the Office in carrying out its functions, section 7a provides for the acquisition of such rights. By this section, the Office is vested with the exclusive right to use and license any invention, discovery, patent, or patent right to which the Government has contributed any money, credit, physical facilities, or personnel, or which becomes to any extent the property of the Government. Thus, should the Government acquire even a tiny interest in an invention, or should it contribute ever so small a fraction of the total development, it instantly acquires the exclusive right to use and the exclusive right to license others. The actual inventor, who may have contributed many times the money and effort contributed by the Government, is completely out of the picture, and must license from the Office the right to use his own invention on the same basis as any outsider who has contributed absolutely nothing.

I sincerely doubt that you intended this provision to be as powerful as it is. The section seems particularly strong when one reflects that if the office were in operation, virtually every invention might be construed to owe some part of

Digitized by Google

its development to contributions of one sort or another from the Government, and the office thus might ultimately come into control of the major portion of the patent rights in this country.

It strikes me that this provision would not be one that would encourage and protect the research and enterprise of inventors, scientists, technicians, etc., for the office would be in a position to dictate (through its powers to formulate programs and render financial and other aid) the course of development and it would then seize the patent rights. The usual incentive, given by the patent system, to individual initiative and capital, would be removed.

While I do not take the position that our present system of research, development, and manufacture is faultless, and that any attempt toward improvement would be fruitless, I do feel the immense progress which we have made, most especially in the past 3 years, speaks most highly of private enterprise. Likewise, I am inclined to doubt that complete Federal control would eliminate the difficulties which do exist.

I therefore suggest that the bill be dropped or most carefully reviewed, with a view to preserving our American way of free enterprise and avoiding autocratic and bureaucratic control that would have an adverse effect on our institutions and progress.

Very truly yours,

W. E. BEALL,
Vice President, Engineering.

EXHIBIT No. 53

JULY 6, 1943.

Mr. W. E. BEALL,
Vice President, Engineering, Boeing Aircraft Company,
Seattle, Wash.

DEAR MR. BEALL: This will express my appreciation for your intelligent analysis of the major provisions of S. 702, as expressed in your letter of June 28.

I regret that you see certain adverse implications in this proposed legislation. It is my intention to find a way to aid scientific and technical men to make a maximum contribution to the conduct of the war, and in coping with post-war problems of the transitional period.

Your protest will be placed before the subcommittee currently studying this bill; but should you care to examine the testimony that continues to impress me with the importance of this bill for the Nation, I shall be glad to send you copies of our public hearings on the measure.

May I assure you that the bill is being carefully reviewed by the subcommittee at the present time.

Very sincerely yours,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 54

AMERICAN GENETIC ASSOCIATION,
Washington, D. C., July 1, 1943.

Senator H. M. KILGORE,
Committee on Military Affairs,
Washington, D. C.

DEAR SENATOR KILGORE: The undersigned is answering your letter to Dr. C. E. Leighty of June 18, relative to war mobilization and the use of technically trained personnel. It happens that, on account of his wide acquaintance among genetic workers, plant and animal, in this country, he has been asked by Dr. Leighty to answer your letter and the questionnaire.

In addition to the specific questions answered in your questionnaire, I should like to make some more general remarks regarding the use, or rather the failure to use, highly trained and highly skilled biological workers in furthering the war effort. In total war, which is fought not only at the point of contact with the enemy, but in full depth back to the humblest hamlet in our mercifully as yet untouched land, the essence of effective strategy is to use the specialized skills of all of our people to the utmost. And in a total war today,

Digitized by Google

which is industrial and technological as well as military, there are very few skills which cannot be used as the utmost efficiency to further the war effort if we use initiative and imagination to harness them into the war effort.

Outstanding as our accomplishments have been on many sectors of the total war front, I submit that the use of biologists has been ill conceived, unimaginative, and stupid. Valuable techniques, learned in years of painstaking laboratory work, have been far too often completely disregarded and the hand and eye which has been trained to use the microscope and the fine measurements and observation of the laboratory has been trained to our great loss to function only as a trigger finger to a machine gun. Far be it from me to belittle the heroic self-sacrifice of those whose trigger fingers must stop the enemy at the point of contact. But in these days of specialized warfare, heroism on the field of battle is futile if a multitude of specialists in the laboratories and the factories fail to do their essential job too. I am dogged by a haunting fear that our enemies are using the specialized skills of their technical workers more effectively than we are. This war will not be won by mock heroics and by rushing off our experts to become a vicarious sacrifice. It will be won by using our skills on the battlefields and behind the lines with maximum effectiveness and efficiency.

Two instances will illustrate what I mean. A few years ago one of our large industrial corporations wrote me regarding candidates for a long-term project in flax genetics which they were undertaking with a view to developing specialized fibers of this important plant. It happened that I was able to be of service in finding them a competent and adequately trained worker who could do this job.. Since his appointment he has been laying the ground work for giving the fiber technologists by selective breeding the kinds of fibers they need for special purposes, and specialized fibers are vital to the war effort. Just a few weeks ago I had a frantic letter from the president of this concern asking me if I could nominate a substitute, preferably a woman, who could take over this man's work as he had been classified 1–A. Since this is a technological war as well as a military war, and since it is utterly impossible to find anyone on the spur of the moment who can bring to this particular problem the cumulative experience of several years, it is obvious that drafting this unique worker means that a program of definite importance in national defense was about to be almost as effectively sabotaged as though a German agent had had his way with it. Perhaps on the basis of the very strong letter I wrote pointing out this fact, I have been informed that this particular worker has been temporarily reclassified. In a total war, to pretend that such work is not more important than retraining unique skills to be sacrificed on the battlefield is a stupidity I doubt our enemies would be guilty of.

In another instance I was able to stave off an ill-conceived enlistment by a uniquely trained medical statistician until such time as the Army could figure out a way to utilize his skill effectively. The difficulty was that the person having this particular constellation of badly needed skills was a Ph. D. and not an M. D. He was needed in the medical corps for epidemiological work. It took the Army 6 months to figure the formal (and in the context stupid) evasion that he would be commissioned in the sanitary corps and then loaned to the Medical Corps because a mere Ph. D. could not be commissioned in the Medical Corps—and a commission was essential to do the job required. One would imagine that utilization of the skills and not the commission or formal rules in a time of crisis was the important point. But under military convention, it was necessary to have a commission to do the job. This particular specialist is now overseas in a capacity which I am certain is more essential and is contributing much more to victory than would have been the case had he been drafted as an infantryman, or if he had followed his own inclination (when the attempt to find a way to use him seemed to have hopelessly bogged down) and enlisted in the Marines.

The main thesis of this longish note documented by two instances out of many, is that the workers in biology, trained for years in specialized laboratory and statistical techniques, do have a place in total war and that at present these skills are mostly being tragically wasted. If your committee can do anything to correct this situation and to enable the small but essential group of specialists to be more effectively utilized it will be a very valuable contribution to victory.

Very respectfully yours,

ROBERT C. COOK, *Editor.*

Digitized by Google

EXHIBIT No. 55

STATEMENT BY AMERICAN GENETIC ASSOCIATION

1. What is the purpose and brief historical background of your organization, including qualifications for membership and the names of its officers?

Answer.—The American Genetic Association was organized in 1903 as the American Breeder's Association. The organization committee was appointed by the Association of Land Grant Colleges to encourage the fullest use of the newly discovered Mendelian principles of heredity. The Secretary of Agriculture, James Wilson, was president of the association from 1903 to 1913. David Fairchild, distinguished botanist and plant explorer, has been president since that time. The association is incorporated as a nonprofit, scientific society under the laws of the District of Columbia. Membership is not limited to professional geneticists but is open, subject to approval by the council of the association, to all who are interested in the increase and diffusion of knowledge regarding heredity. The officers are President David Fairchild; Vice President Sewall Wright, of the University of Chicago; Secretary C. E. Leighty, of the United States Department of Agriculture; Treasurer C. E. Leighty.

2. What is the total membership of your organization? Could you estimate the potential total of men in the fields covered by your organization?

Answer.—Membership totals about 3,500. It is difficult to say exactly at this time because we are out of contact with so many foreign members on account of the war. Among the members of the association are to be found many of the leaders in genetic research in every part of the world. Many of these contribute to the Association's Journal of Heredity, which is recognized as a unique medium of publication in this important field which deals with crops and livestock improvement, and with the thorny question of quality and quantity of human beings. In the United States there are from 12 to 15 hundred professional geneticists who are to be found on the faculties of colleges, in the State experiment stations, and in research for commercial corporations (seed growing, fiber production, food production, etc.). Including agronomists, animal husbandmen, and allied workers, the total might be double or triple this.

3. Please outline the experience of your group with respect to the operation of the Selective Service System since the inception of the latter. If the information is available, this should include the number of men drafted by the armed services, the number of men who enlisted, and the number of men who have been deferred.

Answer. Such a group of specialized workers naturally presents a problem to selective service boards. It is still hard for many of us to realize the implications of total war to a complicated economy such as we have in the United States. It is also true that in scientific research, it is extremely difficult to "call one's shots" in advance, to say categorically that a given research project will yield at a certain date a definite solution to the problem. But in the whole context, theoretical and applied genetics has made tremendous contributions to American agriculture. (See the Genetic Yearbooks of the United States Department of Agriculture for 1936 and 1937 which summarize progress to that time.) And it is not easy for the selective service boards to understand the implications of this situation to the war effort. From letters of inquiry and complaint received from geneticists, and in conversation with Government and experiment station officials in many parts of the country, it is clear that the selective service boards have tried conscientiously to balance the conflicting needs and urgencies of the situation. Where the research directors have tried intelligently to interpret what is going on to the selective service agencies, deferments have generally been granted to irreplaceable workers. In other situations, either because of a failure to do an adequate job of explanation, or because the total implications were not understood, there have been some tragic miscarriages. It seems that the selective service organization has not given realistic consideration to the importance of biological research, and to the return, which a very small group makes to the national welfare. Thus the drafting of a tobacco geneticist might seem to be completely justified if it were not understood that his research on the inheritance of alkaloids, much more effective than nicotine as insecticides, holds the key to large savings of manpower and to larger crops for the same outlay. Thus to draft him might mean an enormous waste of manpower on the agricultural front. The lack of any definite policy with respect to such problems and the failure to realize how tragically wasteful some refusals to grant deferments have been, underline the need for a better integrated and more realistic policy.

Digitized by Google

4. Which of the Federal agencies are supposed to advise Selective Service as regards whether members of your profession should be considered for occupational deferments?

Answer. The answer to this question is not clear, and that is not because of any failure to try to arrive at it. The undersigned has conferred and corresponded with a number of agencies, the National Academy of Science and the National Research Council, the Federal Department of Agriculture, and the Selective Service organization. The writer has been promised statements by the Selective Service regarding the deferment of biologists and geneticists. As far as he is aware, no statement has ever been forthcoming. No agency seems to have been definitely charged with evaluating this difficult problem and with stating the general principle on which specific decisions should be based. If such exist, they have escaped detection by the writer.

5. Do you think that the present Selective Service organization insures adequate consideration of the national interest as regards its handling of the cases of the members of your profession? What changes, if any, would you suggest to insure such consideration? Would you favor placing complete authority for classification of your profession in a central national agency, subject to only quotas determined by the War Manpower Commission?

Answer. In talking with many administrators and scientific workers, it is the conviction of the writer that the national interest is not being adequately served in handling the drafting or deferment of biological workers. The placing of these workers, after they have been drafted, is inept. Frequently men who have had years of highly skilled training, which would surely make them much more valuable as technologists in the medical services than as combat troops, are assigned to the infantry. Too rarely have the special skills been utilized. The writer has had a number of conferences with members of the Division of Biology and Agriculture and the National Research Council regarding this perplexing and important matter. One suggestion was to appoint in this Division of the National Research Council a committee made up of specialists in genetics, medicine, physiology, and other biological sciences to survey this situation and recommend ways and means to utilize to the full the highly specialized skills which unquestionably can be of tremendous value in fighting a total war. A realistic assay of any biological research program should make it possible to determine: (1) the potential value of specific research in total war (immediate and long-term); (2) the likelihood of discoveries calculated to increase the yield of critical materials, save manpower, etc., etc. If such an assay were the basis of deferment, the net gains accruing to the military and economic advantage of the United States would be enormous. It is never possible to predict in advance whether a given piece of research will yield methods and information of technological value. The returns from the researches which do "hit" are so great and frequent enough so that a comprehensive and intelligent handling of this problem along such a line would yield tremendous returns in military and economic strength. The drain on manpower, were such a policy applied to the entire field of biological, biochemical, and medical research, would be so slight as to be trivial. Instance after instance can be cited wherein genetic research (and biological research generally) has yielded tremendous technical advances. To cripple this flow of new and vitally needed knowledge when so few are involved is the utmost in shortsighted folly. Yet this seems never to have been realized in the development of our war plans, to our great loss.

6. If you favor the latter course, do you think the National Roster of Scientific and Specialized Personnel, as presently constituted or as it might be reorganized, should be the agency to allocate professional manpower? If not, what other agency do you think should be given this responsibility?

Answer. The Roster or Scientific and Specialized Personnel has information regarding the qualifications of science workers in all fields. But the staff which administers the roster, as far as is known, is not of the type that would be able to evaluate adequately specific research and investigational projects. This should be done by a group of leaders in the various fields—men of wide experience themselves, whose decisions would be based on supporting evidence regarding each specific research project. As now constituted, the Roster of Scientific and Specialized Personnel would not, in the writer's opinion, be a satisfactory referee of this important problem. Possibly the committee to make such decisions could be set up under the roster, but the Division of Biology and Agriculture would seem a more logical and better-equipped agency for this purpose.

Digitized by Google

EXHIBIT No. 56

OAKMONT, PA., *May 19, 1943.*

Hon. H. M. KILGORE,
United States Senator, Washington, D. C.

MY DEAR MR. KILGORE: I have your letter of April 23 requesting my opinion on the science mobilization bill (S. 702) which has been rather extensively discussed among technical people.

In common with most chemists and engineers with whom I have discussed the matter, I am very decidedly of the opinion that the proposed intervention of the Government in this matter would be very deleterious to the national welfare and to the progress of science and invention. The record of Government scientific agencies in the past certainly does not encourage one to believe in their ability to control and coordinate the research of the country's industries, and I see nothing in the record to justify the confiscation of any or all of the results of scientific research which have been developed at the expense of private parties, and which will ultimately escheat to the public anyway through the normal operations of the patent system.

Sincerely yours,

FRANCIS C. FRARY.

EXHIBIT No. 57

DIAMOND EXPANSION BOLT CO., INC.,
Garwood, N. J., May 21, 1943.

Hon. HARLEY M. KILGORE,
The Senate, Washington, D. C.

MY DEAR SENATOR: I was very much interested in your bill S. 702.

Lest my silence on this subject should be taken as acquiescence to the act, I am taking this opportunity to express to you my complete disapproval of the entire theory of Government ownership or control of scientific research and invention, in a manner outlined in this Kilgore bill.

I cannot too strongly recommend that you give it your most careful consideration.

Necessary use of inventions in war time is already in the hands of the President and this new unlimited power is proposed to be placed in the hands of an office of scientific and technological mobilization for peacetime progress and prosperity with practically unlimited power concerning the use of such developments, compensation, and ownership, and this power to continue after the war.

It is the most far reaching act of legislation that I have ever seen proposed on this subject. It would remove from the individual inventor all incentive and initiative for further improving and developing the arts and sciences with which our country has progressed so satisfactorily in years gone by.

The great danger is that the mere offering of such legislation, even though not passed at present, is likely to result later in a compromise which would be detrimental to the patent system under which we have prospered.

So far as I can see, carried to its extreme, the enactment of this bill might just as well carry with it the complete abolition of the Patent Office and our present patent system.

I know from experience the great benefits that we have all enjoyed in the advantages accruing to the inventor as well as to the public at large and to stifle such future progress would be to lose a continuance of the benefits which which we have accomplished to date.

The scope of this proposed law is defined as follows:

"'Scientific and technical facilities' shall include real property and personal property, tangible and intangible, used or intended to be used for scientific or technical purposes, programs, research, projects, and developments, and shall include further all methods, processes, procedures, techniques, designs, specifications, patents, inventions, and scientific or technical information or knowledge of every description."

This would stifle incentive on the part of inventors. They are as a rule a class of men who know how to think and they will not willingly be regimented into any such plan as this.

While the Government could under this law acquire all the powers set forth above, there is one thing they can not acquire. It may acquire property, plans, methods, and technical information of all industries but it cannot compel a man

Digitized by Google

to divulge what is in the gray matter beneath his cranium, a $5,000 fine or imprisonment notwithstanding.

I therefore trust that you will consider fully what such legislation would mean to our country.

Sincerely yours,

H. W. PLEISTER, *President.*

EXHIBIT No. 58

JUNE 19, 1943.

Mr. H. W. PLEISTER,
President, Diamond Expansion Bolt Co., Inc.,
Garwood, N. J.

DEAR MR. PLEISTER: Thank you for your letter of May 21, concerning S. 702, the science mobilization bill.

Through the hearings held on the science mobilization bill before our subcommittee, we have found that not more than 15 percent of the personnel and facilities of the engineering research laboratories in the country are actively engaged in significant and effective war work.

We have found that, of 1,200 ideas referred by the National Inventors Council to Army Ordnance, only 41 have been considered seriously, and only 4 have been developed and completed.

The office would open a way for researchers and inventors to present their ideas—a way that would encourage their enthusiasm rather than retard it.

It is the clear intent of the author of the bill that fundamental research not only be extended and encouraged, but that it not be shackled by restraints of any kind. The author wants to see the Government going out to the people and scientists and bring them into the war effort at the highest level of their ability.

I wish to assure you that your views will receive full consideration by our subcommittee.

Very sincerely,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 59

FORD MOTOR CO.,
Dearborn, Mich., April 22, 1943.

The Honorable H. M. KILGORE,
Washington, D. C.

DEAR SENATOR KILGORE: I appreciate receiving your letter of April 9, together with copy of your science mobilization bill, S. 702.

You are quite right in assuming that many of the points contained are in line with our ideas for the spreading of information and cooperation for the greatest benefit of the war effort.

I can speak best for the automotive industry, where much progress is being made along these lines, both through the automotive council for war production and the engineers from automotive industries on the Society of Automotive Engineers' war engineering board.

I would suggest that duplication of effort be avoided and that no additional burden be put upon technical supervisory staffs, who are at present covering about as much work as is possible.

Yours sincerely,

EDSEL FORD, *President.*

EXHIBIT No. 60

MAY 18, 1943.

Mr. EDSEL FORD,
President, Ford Motor Co.,
Dearborn, Mich.

DEAR MR. FORD: I greatly appreciate your letter of April 22, stating your general approval of S. 702.

The object of the bill, of course, is to avoid duplication of effort and to increase the effectiveness of technical work by a coordination of effort. The object would be to relieve individuals of excessive work rather than adding to their burdens.

Very sincerely yours,

H. M. KILGORE,
United States Senate.

Digitized by Google

EXHIBIT No. 61

THE DETROIT TESTING LABORATORY,
Detroit, Mich., June 4, 1943.

Subject: Kilgore bill, S. 702.

Senator HARLEY M. KILGORE,
Chairman, Subcommittee on Technological Mobilization of
Senate Military Affairs Committee,
Senate Office Building, Washington, D. C.

DEAR SIR: As an interested independent commercial laboratory which is now rendering the greatest possible service to our Government during times of stress and to the public at all times, we are taking the liberty of addressing you relative to the Kilgore bill, S. 702.

As scientists and as a free-lance laboratory, we are best able to serve in our various capacities when oppressive governmental agencies are not making restrictive measures too onerous.

To shackle technical endeavor is another way to kill individual initiative and thus hinder progress in developing new methods and new products so essential for our greatest national economic development. We believe the Kilgore bill, S. 702, while containing some valuable ideas for a coordinated scientific economy, also includes much that is vicious. No one man, no matter how well intended, can possibly be endowed with the wisdom for the equitable administration of a bill so sweeping and all inclusive as the Kilgore bill, S. 702.

The objects of the bill in general are now successfully accomplished by the voluntary services such as the national scientific and engineering societies are now rendering to our Government, and have always been anxious to render in any and all emergencies.

Regimentation of skilled men and women will not work in a democracy such as we have enjoyed over the years. Too many bureaus are already interfering with our progress in technical development. We can better serve where full freedom of action prevails.

We believe that the Kilgore bill once released from your committee will be subject to an avalanche of protests from all scientific interests now dependent on the free exercise of individual initiative, in sufficient volume to defeat same on the floor of the Senate. In this belief we appeal to your sense of justice and on behalf of the greatest good to the greatest number as well as economy to voice your opposition to the Kilgore bill now before your committee.

Very truly yours,

THE DETROIT TESTING LABORATORY,
Per W. P. PUTNAM, *President.*

EXHIBIT No. 62

LOS ANGELES COUNTY MUSEUM,
Los Angeles, Calif., April 29, 1943.

Senator HARLEY M. KILGORE,
Committee on Military Affairs,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: I greatly apreciate your letter of April 21 with enclosures respecting the science mobilization bill (S. 702). If this measure becomes law in the not too distant future, it will certainly be most opportune as a war measure. We have witnessed many cases where technically trained men have been inducted into the armed forces and placed in combat divisions and their special training and talents thus lost to the Government. If the draft continues in the future along the lines on which it has operated in the past, our scientific staff is likely to be almost completely wiped out.

There is another angle of this bill that particularly interests us. I refer to that section on page 3, lines 2, 3, and 4, which happens to bear directly on one of our acute problems.

Ever since Pearl Harbor our scientific staff has been engaged in the preparation of a manuscript covering diseases transmitted by insects, particularly those of tropical areas in which our troops are now engaged or which they may later occupy. This work has the official approval of the Surgeon General of the United States Navy and the Director of the Bureau of Entomology, Department of Ag-

Digitized by Google

riculture. The author is our staff entomologist, Dr. W. Dwight Pierce, a man who is internationally known for his work in sanitary entomology. His book on that subject was widely used in the last war. There is no up-to-date work covering this particular field. I am certain that its early publication would save the lives of thousands of Americans in tropical regions and in our own country after the return of our troops.

Our chief difficulty now lies in the fact that no governmental agency has any authority or funds available for the printing of this work and its distribution after the manscript is completed. We may of course be able to get private backing, but it would tremendously expedite matters if the board created by your bill had both the authority and the funds immediately available.

I hope you will keep my name on your mailing list for all published material pertaining to Senate bill 702.

Sincerely yours,

JOHN ADAMS COMSTOCK,
Associate Director—Science.

EXHIBIT No. 63

STATE COLLEGE, PA., *May 10, 1943.*

The Honorable HARLEY M. KILGORE,
The United States Senate, Washington, D. C.

DEAR SIR: You are to be highly commended for recognizing the urgent need for immediate action realtive to the scientific resources of the Nation. Reference "A bill to mobilize the scientific and technical resources of the Nation, to establish an Office of Scientific and Technical Mobilization, and for other purposes" (S. 702).

The situation of scientific research in this country at this time is much more serious than is generally realized. There are actually only a few hundred scientists doing original and fundamental work in this country, and this number is rapidly decreasing. Unless corrective measures are applied very quickly this small number will reach the vanishing point. This will be very detrimental for the Nation both in regard to the war effort and for its industrial progress in peace.

Russia, some 20 years ago, recognized the value and importance of scientific work and initiated a very considerable effort to establish a program of scientific research. At present the scientific production in Russia is of high quality and considerable quantity. The effort to establish this program has been both great and recent, so that Russia will not allow it to lapse at the present time despite manpower and other shortages. We fail to appreciate either the values of our scientific programs or the great amount of both time and effort needed to establish them. They have grown with us gradually so that now we are allowing them to lapse without consideration of the great loss involved. It is reported that Russia has placed 50,000 men in scientific research at this time during this war. The astronomers in Leningrad continued their work in astronomy and in their accustomed environment during the siege of that city. (Science, vol. 97, p. 237, March 12, 1943.) Russia recognizes as we apparently do not (until your bill) that a continuance of fundamental, pioneering, and original scientific research is vital for the Nation both in war and in peace.

Japan has also in recent years been trying to establish a program of scientific research. It knows both the values of it and the time and effort necessary to establish it. We can be reasonably sure that Japan is not allowing it to lapse at this time.

Whether the war be long or short and whether we win in a military way or not, we shall certainly lose in the peace to follow if we allow our fundamental scientific research to lapse as we are now doing. Creative science cannot be stopped and started again at will like an electric motor. Once a research program is stopped it takes a great deal of effort and time to make it productive again. Removing from his accustomed environment a productive scientist will cause a loss of many years in his creative work. Even returning him to the same locale will not in general save much of this time. This is in part due to the amount of highly specialized and individually constructed equipment used frequently. These facilities are not purchasable and the techniques of their use are not found in published literature. Trained helpers are also part of the problem. A greater part of the difficulty, however, lies in a body of intangibles which may be called atmosphere. Scientific research is a creative enterprise and depends to a large

Digitized by Google

measure on the birth of ideas in the minds of the scientists. Being unable to either command or demand original ideas, we should cultivate them where they are found and preserve the environment of the men with a record of scientific production. A change of environment may greatly retard progress.

There has been considerable criticism of this bill (S. 702) in scientific and technical circles. In this connection I have been requested to send to you and to other Senators and Representatives copies of a recent article of mine, Research in Wartime, which was printed in Science April 30, 1943, volume 97, pages 390–392.

The criticisms of this bill are directed not to the sincere and worthy motives which prompted it but to the methods outlined in the bill for obtaining the desired ends. Part of this difficulty is due to the lack of a clear differentiation between fundamental and original scientific research on one side and development work and the collection of data of value on the other. The latter is useful but it is not in need of help at this time as it is well provided for. The need for help for the former is critical. Another reason for the criticisms comes from the activities of some of the war agencies organized to deal with scientific and technical problems. Frequently these agencies in energetically endeavoring to arrive at their own immediate objectives have neglected larger values which may have seemed not to come under their specific programs, or they have actually without direct intent tended to retard original scientific research. Instead of providing funds, facilities, and assistance (priorities and deferments) for the creative scientists, they have done the opposite. They have absorbed his time and energies and have made use of his facilities, space and equipment for development work or for the collection of data. If this creative work is not stopped for this reason, it stops because of the lack of funds, help, priorities, and deferments. Thus our fundamental scientific work is rapidly stopping. The selective service rules give an example of how this operates. According to them a graduate student in science (one engaged in assistant and in learning scientific research) is deferred under two conditions only. Either he must be assisting in teaching for approximately half his total time or he must be engaged on a research project sponsored by a Federal agency. This, of course, bring to a stop much of the fundamental research in the colleges and universities as there is no Federal agency that will sponsor fundamental scientific research. Surely fundamental science is as important for the war effort and the national welfare as the development work carried on under Federal agencies or as half time assisting in teaching.

It is difficult to visualize how the bill (S. 702) as written could achieve much of the desired good for our urgent and vital scientific needs. It should be appreciated that science advances through the creative ideas that come to the minds of scientific workers. These cannot be ordered or demanded, and the long and painful history of civilization amply shows that dictation or regimentation tends to prevent rather than cultivate them. As the ideas and the material achievements founded on them do not exist prior to their creation, it is impossible to anticipate them with rules and laws. Conceive of passing laws governing modern communications and transportation prior to the discovery of current electricity.

There is one thing that can be done and this most surely should be done quickly—provide suitable funds, facilities, and assistance for those men who have demonstrated creative ability in fundamental science. Help them with priorities and deferments. Give them helpers to increase their productivity, also students for the continuance of science and scientists. Free them from routine tasks and encumbrance them with a minimum of dictation or direction.

There seems to be no real need for concern about the utilization of science once it is created. There are many Government agencies and departments in industries designed for this purpose and equipped and experienced in it. Greater compensation for the creative scientist working on fundamental problems would stimulate more creation and would retard any tendency to hold new ideas secret in an attempt to capitalize on them. At the present time there is one probably necessary hindrance to the rapid utilization of scientific discoveries. This is the military secrecy orders on certain subject matter. This secrecy has in certain instances tended to prevent the development of useful ideas.

I hope that you will read the enclosed reprint on Research in Wartime. I wish to call to your particular attention the definitions of scientific research and the seven-point program for furthering wartime research.

84949—43—pt. 3——5

Digitized by Google

Copies of this letter and the enclosed reprint are being sent to the chairman of the Military Affairs Committee, the Senators from Pennsylvania, Representative James E. Van Zandt, editors of technical journals, certain editors of the press, and others.

Very truly yours,

J. H. SIMONS.

EXHIBIT No. 64

RESEARCH IN WARTIME

By Prof. J. H. Simons, Pennsylvania State College

[From Science, Apr. 30, 1943, vol. 97, No. 2522, pp. 390–392]

At a time when the Nation is engaged in a gigantic war that will determine the very survival of civilization, it is appropriate to examine all our activities in the light of values in the war effort. The only purpose of any real significance for anyone's actions is the defeat and destruction of the enemy. All personal or political motives represent various forms of treason. Every activity not contributing to the war effort should be either stopped or redirected. Scientific research should be examined with this point of view.

Modern war requires modern weapons, and these are directly the product of scientific research. It is true that it is a long way from the birth of ideas in the brains of the scientists, their demonstration, verification, and study in the research laboratories to the final perfection of powerful weapons for the destruction of the enemy or of materials and tools for the aid and comfort of ourselves and friends. This way, however, follows a direct path that is fully recognized. From the source of the original ideas it progresses through development, engineering, trial, and production. All the weapons, tools, and materials of vital importance in the war, to a very considerable extent, have had their beginnings in the scientific research laboratories. The research of the past produced our present practices and materials. New things for the future will have their beginnings in the research being done at present. The only sure way of not having new weapons or major improvements of old ones is to stop scientific research.

Research is a word that is used for different meanings by different people. In some industrial firms it is made to include the development of industrial processes after the original ideas are all well founded. In other places it is used to include data collecting or the operation of well-known and recognized techniques on a small scale in a laboratory. These activities coming under the name "research" are easily evaluated in relation to the war effort. A process or machine should be developed if it contributes directly to the war effort. Data should be collected if there is a wartime need for it, but otherwise not. In the same way small-scale laboratory operation of known techniques should be continued or not in relation to the use or nonuse of the product for the war effort.

The more subtle meaning of the word "research"—the birth, demonstration, verification, and study of new ideas—is a much more difficult thing to evaluate. This type of work is chiefly done in college and university laboratories. To the layman it appears to be only an academic exercise as it is not clearly defined, is not represented at that time by human use on a large scale, and most frequently is clothed in a formidable garment of technical terms. Neither industrial nor Government funds are available for it, as the results to be achieved cannot be written out in advance. All industrial firms and Government agencies require well-formulated objectives for a project as well as a detailed outline of methods of procedure. For fundamental and original research as defined above, these are completely impossible. The real cost of this kind of work comes chiefly out of the hides of those whose artistic or fanatical urge causes them to do it. It comes in the long days (and nights), the Sundays, holidays, and vacations spent on the work, frequently without much encouragement or material aids. After the fundamental work is well on its way and the new ideas have been amply demonstrated, Government agencies or industrial firms will carry out the development work. The history of science gives numerous examples of the above. The early work in electricity, in organic chemistry, and in physical chemistry can be cited, for these, despite their present large-scale industrial use, began in the academic scientific laboratories.

This kind of work has in the past produced results that have changed the entire course of history. Examples of this are the discovery of electromag-

Digitized by Google

netism, the vacuum tube, and the synthesis of ammonia and of indigo. On the other hand, the work of any one particular man may not result in such world-startling discoveries; it may only add a small but valuable amount to the sum of human knowledge. It is impossible to predict the value of the fundamental research of any one man. We do know that in general it is this work that is the fountainhead of new developments. How soon or how long any particular piece of original and fundamental research will produce results that can be directly or indirectly of military value cannot be stated. The undisputed fact is that the more of this kind of work in progress the greater chance there is of new weapons.

The national cost of fundamental research in men and materials is relatively insignificant. There are only a relatively small number of scientists engaged in this work (a few hundred) and their requirements in the way of equipment and help, when considered on a national scale are relatively insignificant. However, at the present time it is not sufficient to take a point of view that we can "let" them work. Letting at this time must be a positive and not a negative action. It must mean that such scientists and their students be not required for other duties such as military service or civilian defense. Their income must continue. They must have help and funds for securing materials. They must be provided with assistance and technical aids. In other words, funds, priorities, and draft deferments have to be considered as part of the word "let." The assignment of priorities for research materials shows that this is recognized by the Government. It is, of course, also important that the institutions in which this work is in progress should not consider it as an unessential academic exercise or an extra burden on the overhead account.

At the time, several years ago, when our Government first recognized that our entry into the war was unavoidable, it was natural to take the point of view (and this was done by some of our military people) that the research that would be used or needed in this war was all done and that the war would be fought with what we had. They thought the same about steel capacity and the designs of tanks and planes. As the military leaders cannot predict the length of the war, the time available for research to aid in it is also unpredictable. If the war is short, there is no need of disturbing or changing the present fundamental research program. If it be long, then there is a vital need for both continuing it and augmenting it in the near future. No one can tell from what laboratory will come new and important discoveries. We are certain, however, that the more fundamental and original research done the greater the chance of the discoveries. The only way not to have the discoveries would be to close the laboratories. We may be in vital need of new discoveries. Without them we shall be placed in the position of giving the enemy the initiative and following his discoveries with a time disadvantage.

Scientific advancements made during the war may be very important. The development of the synthesis of ammonia in Germany in World War No. 1 caused the blockade to be much less effective than the military leaders of the Allies figured, because Germany was then not dependent upon Chile saltpeter for its explosives. It is the new discoveries made now or in the near future that may shape the course of victory.

To be unduly critical of any one particular fundamental research project as impractical or of only theoretical interest and therefore not significant for the war effort at this time is highly unsound reasoning. How can anyone tell in advance to what extent or how soon it can be put into practice. What is highly theoretical today is put into large-scale practice tomorrow.

One cannot determine the value of research to the war effort by whether or not it is fostered or financed by a Government agency. Government agencies support and develop discoveries once they are made, and they also direct this development toward ends of military value. New ideas and discoveries, however, are most likely to spring up in laboratories devoted to original research, and it is these new discoveries that can then be taken by the Government agencies for development. In fact, those discoveries made in the recent past in chemistry that are having the most significance at present in the war effort were not made in Government-sponsored laboratories. Some of these in their beginning stages would not have been financially aided by any Government agency or industrial firm, as they differed greatly from commonly accepted practice. In its inability to know just which laboratory, working on original work, will produce the most vital results for the war, science is not much different from the military. The high command cannot tell in advance just where the most important battles will take place. Many garrisons and bases will be unused. Many divisions and

Digitized by Google

material will not see action. We cannot in advance, however, say that these divisions are unnecessary.

Fundamental and original scientific research is, therefore, not only of great value for the war effort, but its continuance may be vital for victory. It is not an activity of secondary value for such things as morale or the selling of bonds, regardless of the values of these activities. Its products may have a direct bearing on killing the enemy and certainly will have, if the war lasts for years. How to continue it under present difficulties and restrictions is a matter for serious consideration. In this connection the following suggestions are made:

(1) Scientists of recognized tendencies toward original work and of proven accomplishments in fundamental research should be encouraged to continue. They should not be taken for what may be more emotionally satisfactory work on a development project under a Government contract.

(2) Priorities and draft deferments should be provided.

(3) Funds will be needed; but these should be free from the requirements of extensive reports and outlines of procedures in advance, such as are now required in most Government and industrial work.

(4) The work should not be directed by some committee chairman. Committee chairmen cannot be familiar with the work—otherwise they would be doing it.

(5) The funds should not be dependent upon the individual scientist's political connections or his ability to get elected or appointed to committees or society offices.

(6) Students should be permitted and encouraged to enter fundamental scientific work. A great deal of this kind of work has been done in the past by students under the direction of a professor interested in fundamental research. At the present time there is danger of encouraging students to enter the so-called more practical lines of work. General Hershey in his statement regarding the deferment of graduate students considers only those assisting in instruction and those working on a sponsored war project as eligible for deferment. Research on fundamental and original scientific problems should be placed in the same category as the work sponsored by Government agencies as its chance of direct value in the war is at least as great.

(7) In order to insure that the scientist engaged on original and fundamental research can direct his thoughts along lines such that his creative ideas will have the best chance of being of immediate military value, he should be made familiar with the problems, materials, and techniques of military importance that are related to his branch of science. This can be done without confining him to work on any particular project and without danger of loss of confidential and secret subject matter. The scientists of this country realize full well that our defeat will mean that they, each and every one, will be executed shortly thereafter. They have the knowledge of what has happened to their colleagues in the occupied countries of Europe. They are very anxious to help so that this will not happen here.

The day that fundamental and original scientific research stopped in Germany was the day that Germany began losing the war. This will be true provided that we do not stop our fundamental scientific research. We are in great danger of doing this at this time, with our scientists being taken for development projects and other activities. If the war is a long one, we will greatly regret the loss of the scientist and his students doing original work.

EXHIBIT No. 65

MAY 24, 1943.

Prof. J. H. SIMONS,
State College, Pa.

DEAR PROFESSOR SIMONS: This will express my warm appreciation for your fine letter of May 10 concerning the science mobilization bill, S. 702. The constructive comments and recommendations will be given full consideration by our committee, and I would certainly welcome any further assistance you may care to offer in connection with the proposed bill.

I should like to repeat a sentence of your article, Research in Wartime, with which I am in full accord. "The day that fundamental and original scientific research stopped in Germany was the day that Germany began losing the war."

We all know that just as the war has redirected all phases of the national activity, it has also disrupted the progress of fundamental research. The col-

Digitized by Google

lege, university, and foundation programs which normally carry the bulk of this type of research have not only had their programs curtailed but, I believe, may be unable to resume them after the war unless considerable aid is forthcoming from the Government. Such Government subsidies to the outside groups, unlike subsidies granted by industry, should make no demands and should in no way interfere with the process of free inquiry. It is the clear intent of the authors of the bill that fundamental research not only be extended and encouraged but that it not be shackled by restrictions of any kind. This is in accordance with the principle that science operate in the interest of the public. This interest, I believe, is best served by a completely free and unrestrained science.

Adequate Governmental encouragement of scientific and technical activities is long overdue in this country, and I invite the active participation of competent scientists in formulating an appropriate program.

Sincerely,

H. M. KILGORE, *United States Senator.*

EXHIBIT No. 66

STANDOLIND OIL & GAS CO.,
Tulsa, Okla., June 23, 1943.

Senator KILGORE,
Washington, D. C.

DEAR SENATOR: I have before me a copy of Senate bill 702, introduced by you and said to have been referred to the Committee on Military Affairs. Reading beyond the high-sounding phrases under declaration of policy, I find a bill which, whether by design or not, sets up another super Federal establishment with the most arbitrary and despotic powers over the destiny and functions of industry and all workers from the keenest scientist to the laboratory janitor, and this in a country which is fighting a desperate war to destroy totalitarianism and to preserve the very freedoms which this bill could so easily make a mockery.

Has it not by chance occurred to you that the very genius and success of our industry and science in the past has been due in large measure to our system of free enterprise and competitive effort? That the failure to employ to the fullest the possibilities of invention and scientific discoveries lies not so much at the door of unplanned effort as at the door of the tradition-bound Army-Navy "brass hats" and their counterpart, the political-minded, power-lusting, and narrow-minded Federal bureaucrats?

Rather than to add another superautocratic bureau, would it not be better to make an honest effort to cut out the dead wood, simplify, consolidate, and make more efficient and intelligent the function of the many existing Federal agencies? The Bureau of Standards, the Bureau of Mines, Office of Scientific Research, National Roster of Scientific and Specialized Personnel, and the National Research Council, among many others, completely cover the fields proposed by this bill.

As an American citizen and scientist, I respectfully ask that you advise me why and for what reasons you believe this bill is advisable and necessary, especially in peacetime.

I have written the Representatives to Congress from Oklahoma protesting the passage of this bill, and I am sending copy of this letter to the chairman of the Senate Committee on Military Affairs.

Yours very truly,

R. J. RIGGS.

EXHIBIT No. 67

JULY 21, 1943.

Mr. R. J. RIGGS,
Stanolind Oil and Gas Co.,
Philcade Building, Tulsa, Okla.

DEAR MR. RIGGS: This will acknowledge your letter of June 23, regarding the science mobilization bill, S. 702.

I regret that you see certain adverse implications in this proposed legislation. It is my intention to find a way to aid scientific and technical men to make a maximum contribution to the conduct of the war and in coping with post-war problems of the transitional period.

Digitized by Google

Your protest will be placed before the subcommittee currently studying this bill, but should you care to examine the testimony that continues to impress me with the importance of this bill for the Nation, I shall be glad to send you copies of our public hearings on the measure.

Very sincerely yours,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 68

HARVARD UNIVERSITY,
Cambridge, Mass., April 26, 1943.

Senator H. M. KILGORE,
Committee on Military Affairs,
United States Senate, Washington, D. C.

MY DEAR SENATOR KILGORE: Many thanks indeed for the copy of the science mobilization bill, S. 702, and for your abstract of its salient features. I have read them both and had a good deal of discussion of them with my colleagues here in the Harvard Psychological Laboratory.

The bill seems to me to be correct in its intentions and general provisions, very important, and a measure that ought to pass. I hope very much that you can be rewarded for your pains and effort in its behalf by success in both Houses.

There can be no doubt that the emergency has revealed the practical importance of science to Government and social warfare, and that the emergency which will inevitably follow the peace should be no less dependent upon the utilization of scientific knowledge and facilities. We must not forget that a successful peace and readjustment will be achieved, not in a single stroke, but only by eternal vigilance, and, in what I hope will be the continuous effort of the Government to improve social weal after the war, the results of research and the methods of research ought to be used as fully as they are now under the Office of Scientific Research and Development.

The passage of the bill might dislocate the Office of Scientific Research and Development, which is doing a splendid work at present, both on the side of the Committee for Medical Research and the National Defense Research Committee. I hope it will not do that, but will simply enlarge the scope of this work and contribute to the efficiency of the lines of research that are already in progress. I did not find in what you had to say that you realized fully what the Office of Scientific Research and Development is doing, but I think you do if I may judge from other reports of your work which I have read.

With best wishes for the success of this bill, I am,

Cordially yours,

EDWIN G. BORING,
Director of the Psychological Laboratory.

EXHIBIT No. 69

MAY 21, 1943.

MR. EDWIN C. BORING,
Director, Psychological Laboratory,
Emerson Hall, Harvard University, Cambridge, Mass.

MY DEAR MR. BORING: Thank you for your fine letter of April 26 in support of the science mobilization bill.

We are indeed conscious of the work of the Office of Scientific Research and Development, which is doing one of the finest jobs in the field today. I assure you that the bill is designed to strengthen the hand of effective research everywhere and to coordinate the work of all existing research agencies. It would not interfere with existing organizations.

I hope you will give this measure your active support to insure its early passage.

Very sincerely yours,

H. M. KILGORE,
United States Senator.

Digitized by Google

EXHIBIT No. 70

NATIONAL CIVIL SERVICE REFORM LEAGUE,
New York, N. Y. April 30, 1943.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: I have read with much interest your bill S. 702 to mobilize the scientific and technical resources of the Nation, and to establish an Office of Scientific and Technical Mobilization. I believe the legislation is both necessary and desirable and hope that it will receive favorable consideration by the Congress.

I have been impressed with the potentialities of the presently operating National Roster of Scientific and Technical Personnel now under the jurisdiction of the War Manpower Commission. It has proved a useful and valuable means of supplementing recruiting for the Government service, particularly for high professional and scientific services. Your plan is far more comprehensive and has great potentialities, both war and peacetime.

May I take this opportunity to make one suggestion, which I hope will commend itself to you? On page 6, lines 16 to 19 of the bill authority is given to the administrator to waive requirements of the civil service act and rules when he deems it necessary to do so. I appreciate the purpose you have in mind, but I wonder if it is wise to give the administrator such sweeping and unlimited authorization. Frankly, I believe the proviso is unnecessary for under the civil service act and rules the President and the Civil Service Commission could, in proper cases, waive requirements of the civil-service law and rules upon the recommendation of the administrator. It seems to me that this would be preferable to placing the authority exclusively in the hands of the administrator. There is no good reason for giving him this broad authority which is withheld from all other appointing authorities. I believe that you will agree with me that it is unwise to grant special exceptions of this character which accomplish no really useful purpose and establish unwise precedents.

The broad authority and responsibility which your proposal places in the hands of the administrator makes it all the more imperative that the selection of his subordinates be safeguarded against any possible suspicion of partisanship. I believe the elimination of the proviso in lines 16 to 19 would avoid any misunderstanding and still not prevent waiving of the civil service requirements in special cases where deemed proper by the Civil Service Commission.

With best wishes,

Sincerely yours,

H. ELIOT KAPLAN, *Executive Secretary.*

EXHIBIT No. 71

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT,
Washington, D. C., December 7, 1942.

Hon. HARLEY M. KILGORE,
Chairman, Subcommittee on Technological Mobilization,
United States Senate, Washington, D. C.

MY DEAR SENATOR: Mr. Gordon has kept me posted in regard to the progress of your study of technological mobilization, in which, of course, I am exceedingly interested. For some reason your letter of December 1 did not reach me until this morning, but, on the basis of Mr. Gordon's report to me of his conference with you of a few days ago, I had already drafted some material, so that I am enabled to write a reply rather promptly in accordance with your last statement that you wish to have comments within a few days. I hope and trust that the delay in reply since the date of your letter will not in any way be inconvenient to you.

The whole problem of technological mobilization for modern war is one of extreme breadth and difficulty. For 2½ years now I have been deeply immersed, not only in carrying on one aspect of this matter, but in a deep study of the appropriate organizational means by which it can be best furthered. The conduct of modern war depends in no small degree upon the skill and effectiveness with which science and technology are brought to bear. In fact, the entire course of events may be seriously affected by the question of whether our weapons are

Digitized by Google

fully equal to those of the enemy, and this in turn depends upon a large number of steps. We need to utilize the inventiveness of our people, we need to bring to bear the best scientific and engineering skill, we need to manufacture effectively and promptly, and we need training programs that are adequate so that the resulting tools can be effectively and fully used. It is a fascinating and exceedingly important aspect of the entire war effort. I know of no aspect of our national effort that more clearly warrants all of the careful consideration that can be brought to bear upon it. Accordingly, I have followed your studies with the deepest interest.

Yet as I read the first draft of the bill which has been under discussion, S. 2721, I immediately feel that it is based upon inaccurate premises. The first two sections seem to me to be founded upon some feeling that we are far behind the enemy, that there are serious bottlenecks in our technical effort, and that in general we have a serious situation upon our hands which warrants radical changes. I cannot by any means, of course, urge that the present situation is not capable of being improved, but I am very far from subscribing to this preamble.

The prosecution of war research involves many phases. I think that it will clarify my comments upon this bill if I outline some of these phases and the way in which they are now provided for under the present governmental organization.

First, there is the definite job of research and development upon new and secret weapons. This, I feel, is the most important aspect of the whole affair. The responsibility for this piece of work is lodged in the Office of Scientific Research and Development. Together with its predecessor, the National Defense Research Committee, it has now had 2½ years of experience in close collaboration with the Army and the Navy in this effort. I append a document which outlines the way in which this organization is put together, the nature of its internal relationships, the contracts which it has under way, and similar data. The point which I wish to emphasize here, however, is that this particular section of the work is unique in several ways. First, it involves cooperating with both the Army and the Navy, and in servicing both it ties together their interests at innumerable points. Second, its work is by its very nature highly secret, and it hence needs to be carried on under the closest organizational control and in very close interrelationship with the armed services. Third, it needs for its furtherance the aid of the outstanding scientists and technical men of the country, the services of the best laboratories that can be found, and every organizational aid which will make it possible to work rapidly and flexibly. In view of the experience to date, I feel that the Office of Scientific Research and Development has all of these things, and that under its organizational form it is well adapted for the purpose in hand.

The real answer, of course, as to whether it is adapted to its purpose or not should be given by naming the results that it has accomplished. The last time that I appeared before the Appropriations Committees of the House and Senate I presented letters from the Secretary of War and the Secretary of the Navy which made definite statements in this regard. I feel that the statements as to accomplishments of this Office should always come from those that we service, namely, the Army and Navy. Every meeting in Office of Scientific Research and Development, concerned with new weapons, joins civilian scientists and technologists with military men; in the sections where officers, who are specialists, join in originating and guiding projects, in National Defense Research Committee where Major General Williams and Captain Smith are members, and in the council. The armed services take over when a device arrives at the point of production and use. Something over a hundred projects have thus produced devices or processes which have been adopted for use in the Army or Navy. They hence know well the record which Office of Scientific Research and Development has thus far established.

It is true that the National Defense Research Committee is charged by the President with research and development on instrumentalities of war, but there is one exception. The National Advisory Committee for Aeronautics has been in existence for over 25 years. It was established for the purpose of improving our knowledge of the problems of flight. Through the long years of peace it labored to advance the science of aeronautics and its application to the construction of better aircraft. It is a very fortunate thing that the Congress established and continued to support this agency, for upon its efforts rest in no inconsiderable degree the fact that the United States was not found lacking when it came time to apply its aeronautical knowledge in combat. The National Advisory Committee for Aeronautics is made up of military and civilian mem-

Digitized by Google

bers, who serve without compensation. It operates extensive laboratories. It works in very close collaboration with the Army Air Force and the Bureau of Aeronautics. It deserves and receives the interest and support of Congress in its undertakings. Evidently, when Office of Scientific Research and Development was formed there was no justification for duplicating the work done by this excellent agency. Accordingly, research on the problems of flight, as covered by the National Advisory Committee for Aeronautics, has been left to that organization. Appropriate interchange between these agencies has, however, been readily accomplished. Dr. Hunsaker, Chairman of the National Advisory Committee for Aeronautics, is a member of the Council of Office of Scientific Research and Development. The Director of Office of Scientific Research and Development is a member of the National Advisory Committee for Aeronautics. There is no lost motion as between these two groups, and no formal organizational integration is needed in order to further their efforts.

At the same time that National Defense Research Committee was formed, in June 1940, the National Inventors Council was also formed in the Department of Commerce. This agency reviews suggestions coming from the public. It receives a very large number, indeed, of suggestions that pertain to the war effort, and examines into these by means of committees of competent scientific standing. Those that are found worthy of military attention are brought to the appropriate group in either the Army or the Navy. In the case of a suggestion, received in this manner, which proves to be sound and of interest, if further development is warranted, this is readily provided for by reason of a request from one of the armed services to Office of Scientific Research and Development, which has funds and organization for the purpose of investigating any such suggestion as may appear likely to lead to a valuable result. The National Inventors Council performs a very needed function in thus examining into very many suggestions. Many of these, of course, are duplicates. Many also are prepared by individuals who cannot realize the actual conditions of practice. Unfortunately also, there are many suggestions received in this way, sometimes from highly enthusiastic individuals, which prove on careful unbiased examination to be impractical. There are also many suggestions received of possible devices where active development of devices of just that sort is already under way. It would be pleasant in such cases to be able to inform the inventor that his suggestion is already embodied in a device which is already well on its way toward practical use. In general, however, this obviously cannot be done, for it is usually impossible to thus advise an inventor on a particular point without divulging a considerable section of secret information. However, it is my opinion that ideas of real merit which reach the Inventors Council are carefully reviewed, and that the cases in which worth-while ideas are not appreciated or are overlooked are very few indeed. Moreover, the means for proceeding with valuable ideas is now present, either by reason of action on the part of the armed services themselves, or by reference to Office of Scientific Research and Development by the services with a request for development. I believe that the Inventors Council can best operate as it is; namely, as a part of the Department of Commerce organization, for it has close association with the Patent Office, which is desirable, without, of course, in any way impairing the care with which the Patent Office maintains the secrecy concerning ideas which are committeed to its charge in patent applications.

In examining into the structure thus far outlined, it is evident that there is a definite gap. In times of peace there is an enormous amount of industrial research carried on in this country in connection with the problems of industry. In time of war, much of this research becomes diverted to solve the problems of strategic and substitute materials and processes, and other problems incident to the adaptation of our industrial machinery to war production. This phase of research, especially on substitute materials, is indeed important. Under the Executive order of the Office of Scientific Research and Development the President charged the Director with the general duty of coordinating all research in connection with the war effort. Accordingly, under this direction, I immediately studied into this problem. I found that the War Production Board, in certain areas, was actively engaged in the correlation of this type of research, and its direction along lines of the war effort. This was being done notably in the case of certain problems of strategic minerals and metals. In these the War Production Board had secured the advice and counsel of the National Academy of Sciences and the National Research Council. In my opinion the relationship was correct, and capable of accomplishing very useful results. However, I had the strong feeling that work in this area

Digitized by Google

needed extension. I accordingly recommended to the War Production Board that they organize this phase of their effort more centrally, and that they extend their work on research on strategic and substitute materials and processes. This they have recently done by the creation of an Office of Production Research and Development under the directorship of Dr. Harvey N. Davis. In my opinion this Office has an excellent opportunity to accomplish much in those fields of research which are more definitely along industrial lines, and not concerned with weapons which are secret, and I have great confidence that Dr. Davis, who has just started on his effort, will produce results. I have never felt, and I do not now feel, that this phase of the research effort should be located in the Office of Scientific Research and Development. On the contrary, I have felt that it could best be carried on in the War Production Board organization which already has the necessarily close contacts with industry and with industrial problems. To place it in the Office of Scientific Research and Development would involve duplication of facilities. Moreover, the work is of a very different nature and it would be exceedingly difficult to combine in the same organization the rigid arrangements that are necessary for the secure handling of secret matters concerned with new weapons and the development of new industrial processes, where facile interchange between industrial units having the same types of problems is an essential element.

While Dr. Davis is only well started in his work in War Production Board, it is evident that close interrelation with Office of Scientific Research and Development is in order, to avoid duplication, and to render the results of one organization available to the other, when applicable, and this will be established. There will also be a flow of ideas which reach the Inventors Council, and which are industrial in application, to the new organization in War Production Board. On the other hand, Dr. Davis will not need the close liaison with the armed services at every point, which is essential in the work of Office of Scientific Research and Development. I do not wish to speak for Dr. Davis, who is quite able to speak for himself, but these are points in his general plan as I understand it.

There is one further phase of research concerned with the war effort; namely, medical research. This, needless to say, is of exceedingly great importance in many ways. The safety of our soldiers and sailors, especially in tropical regions, and under the stress of air action, depends in no small degree upon the efficiency of our medical units in the Army and Navy, and upon the aid which they can be given in their problems by civilian medical research scientists. By order of the President, research on military medical matters is centered in the Office of Scientific Research and Development, where it comes under a committee on medical research headed by Dr. A. Newton Richards. This committee leans heavily upon committees of the National Research Council for aid and advice and works very closely with the Surgeons General of the Army and Navy. There is another phase of medical research, equally important, concerned with the whole broad subject of the public health. This is, as it has been for many years, centered in the Public Health Service, which is now a part of the Federal Security Agency. There is very close interchange indeed between Dr. Richards and Dr. Parran, the Surgeon General of the Public Health Service, and a member of Dr. Parran's research staff sits on the committee on medical research. This provides for a proper interchange of results, where these are of interest in both phases of the general problem, and it also provides against unwarranted duplication of effort.

In addition, of course, there are various departments of government which carry on research which is closely connected with the war effort. Notable are the Department of Agriculture and the Bureau of Mines, to name two among many. The Office of Scientific Research and Development is enabled under its Executive order to call upon these groups for aid on particular problems, and it has done so, notably in the case of the Bureau of Standards.

The National Academy of Sciences remains, as it has been since the time of the Civil War, the agency charged in its congressional charter with the duty of advising Federal agencies in regard to their scientific problems. Dr. F. B. Jewett, president of the academy, has stated its functions to you in his testimony, and I will not enlarge upon it. The academy and its organization, the National Research Council, are called upon in this capacity by the Office of Scientific Research and Development as well as many other Government agencies. Undoubtedly Dr. Davis and his Office of Production Research and Development in War Production Board will lean heavily for advice upon the academy.

It may be well to summarize the course of an idea. Invention, the first suggestions that lead to new military devices, arise in many places. Since a full grasp of actual needs and a keen realization of the practical conditions of combat is a prime criterion in any new device, the origin of an idea is most likely

Digitized by Google

to arise in the mind of some individual in the armed services who is faced with the problem needing solution in a very forceful way. It may also arise in the mind of a scientific man closely associated with military activities. By comparison, the independent inventor is not nearly as likely to produce useful suggestions on strictly military matters, although it sometimes occurs. However, the individual inventor, in civil life, is much more likely to produce ideas which are applicable to industrial processes. When such an idea is received by the Inventors Council it is first reviewed by scientific groups. If it is in the field of aviation, it is then referred, if of apparent importance, to National Advisory Committee for Aeronautics. If it is of industrial nature, it will go to Dr. Davis' organization. If it applies to a new weapon, it becomes studied in the Army and Navy. It is usually a long way from the basic idea to its practical utilization. In all three instances above, however, there is provided means by which such an idea may be developed, along with the ideas that arise within the organization itself. Moreover, the Army and Navy have not only their own research and development organizations for this purpose, but also the aid of the Office of Scientific Research and Development on call. It is also possible to turn to the research facilities in one of the regular Government departments for aid. Throughout this procedure the scientific advice of the academy is available if needed. There thus seems to me to be available at the present time a fully operative procedure for carrying an idea through from its inception to its actual use. The one gap has been, until recently, in the field now covered by War Production Board and when Dr. Davis' organization gets fully under way this gap will be closed.

I believe that this gives the present range of the technological effort in connection with the prosecution of the war. The principal question that immediately arises is whether a reorganization of this effort is necessary for its best functioning. My personal opinion is that no such reorganization is at present called for. There are undoubtedly many places where procedures and relationships can be improved in detail. However, a sweeping change that would place all technological effort under one head is not, in my opinion, desirable. Such a step is needed only where interests conflict and duplication occurs, where there is not proper liaison, and where there is overlapping of effort. None of this situation, in my opinion, obtains in regard to the technological effort at the present time. There is the closest of coordination, relationships are cordial throughout, and duplication is avoided. Moreover, each organization has its own clearly defined unique job and is carrying it on energetically.

There are many things that I could urge. I could urge, for example, that all support possible be given to the effort of Dr. Davis in connection with his new office in War Production Board, for I think it is a difficult job, but one which is full of possibilities. However, they are not points raised in your letter or in your bill. I would be very happy to discuss them with you at any time, but I do not believe that you wish me to go into them in this letter.

My summary of the situation, then, is as follows: I believe that the technological effort of this country is of exceedingly great importance, and I am glad to see it studied into thoroughly, and I hope that it will be studied into many times as our war effort proceeds, in order that it may be kept keenly alive to its opportunities and in order that any malfunctioning may be corrected. However, I do not believe that a bill that would join the various research and development agencies is now needed. On the contrary, I believe that the confusion which it would cause and the delays incident to the reorganization of effort which it would enforce would far offset any benefit which might come out of it.

Cordially yours,

V. BUSH, *Director.*

EXHIBIT No. 72

DECEMBER 4, 1942.

THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT AND RELATED ORGANIZATIONS

Prepared by F. S. Gordon

The Office of Scientific Research and Development was established on June 28, 1941, by Executive Order No. 8807. The Executive order provides that Office of

Digitized by Google

Scientific Research and Development shall be headed by a Director appointed by the President (Dr. Vannevar Bush), who shall be advised and assisted in the performance of his duties by an advisory council. Office of Scientific Research and Development was given the following two main functions: (1) The initiation and support of scientific research on the mechanisms and devices of warfare and (2) the initiation and support of scientific research on medical problems affecting the national defense. The National Defense Research Committee (which had been created on June 27, 1940, by an order of the Council for National Defense approved by the President) was continued in existence and charged with the duties and advising and assisting the Director of Office of Scientific Research and Development in the performance of his duties in the field of instrumentalities of warfare, and the Committee on Medical Research was established to advise and assist the Director of Office of Scientific Research and Development in the performance of his duties in the field of medical research.

THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT ADVISORY COUNCIL

The Office of Scientific Research and Development Advisory Council is composed of the following members:

1. The Director of Office of Scientific Research and Development as chairman;
2. The Chairman of the National Advisory Committee for Aeronautics (J. C. Hunsaker);
3. The Chairman of National Defense Research Committee (James B. Conant);
4. The Chairman of the Committee on Medical Research (A. N. Richards);
5. An Army representative designated by the Secretary of War (H. H. Bundy); and
6. A Navy representative designated by the Secretary of the Navy (Rear Admiral J. A. Furer).

The new Director of the Office of Production Research and Development, of War Production Board, Dr. Harvey N. Davis, met with the Council at the last meeting, immediately after his appointment.

By reason of a special letter from the President, Dr. F. B. Jewett, president of the National Academy of Sciences, advises the Director of Office of Scientific Research and Development and often meets with the Council.

It is through the Office of Scientific Research and Development Advisory Council that the broad questions of policy affecting Office of Scientific Research and Development are determined. Composed as it is of representatives of all organizations principally interested in war research for the United States Government, the members of the Advisory Council are uniquely equipped to advise on the overall aspects of war research.

THE NATIONAL DEFENSE RESEARCH COMMITTEE

It is the duty of National Defense Research Committee to implement in the field of war weapons the broad decisions of policy made by Dr. Bush with the advice and assistance of the other members of the Advisory Council. In order to work effectively, the National Defense Research Committee organization is broken down into divisions and the divisions in turn are subdivided into sections, each of which concentrates on work in a very specialized field of research. These sections originate most of the specific proposals for the placing of contracts with nongovernmental organizations (universities and business organizations having research facilities). Here also at this operating level there is the closest cooperation with the armed services in order to insure that practical aspects of the problems are given the necessary consideration. The Army and Navy have representatives assigned to each section of National Defense Research Committee, and nearly all proposals for specific contracts are initiated by the sections in consultation with such representatives of the armed services. Most of these proposals have their first attention by reason of a direct request for aid from one of the armed services. However, in accordance with the President's orders requests from the United Nations are also acted upon. The contract proposals flow from the National Defense Research Committee sections to the National Defense Research Committee divisions and, if approved by the particular National Defense Research Committee division, are then considered by the members of National Defense Research Committee at one of the regular meetings.

Digitized by Google

Representatives of the Army and Navy, appointed by the Secretary of War and Secretary of the Navy, respectively, are members of the National Defense Research Committee and thus are in a position to review all specific contract proposals and to determine whether or not the emphasis desired by the armed services is being achieved. If at the National Defense Research Committee meeting it is decided that a proposed contract should be negotiated, the members of National Defense Research Committee make such a recommendation to Dr. Bush, the Director of Office of Scientific Research and Development, who decides in the final instance whether or not such a contract shall be executed.

Some of the requests for development received from the Army and Navy arise because of ideas which originate as suggestions by individuals which are reviewed by the National Inventors Council, and thus brought to the attention of the services. Hon. Conway P. Coe, Commissioner of Patents, is a member of National Defense Research Committee, and thus furnishes direct contact with the National Inventors Council.

The internal set-up of National Defense Research Committee is now in the process of reorganization. At the present time there are (i) four divisions of National Defense Research Committee and (ii) some special committees (including the group at the National Research Council of the National Academy of Sciences working on metallurgical problems) reporting directly to the Chairman of National Defense Research Committee. The proposed reorganization (which should be put into effect within the next month) contemplates a greater degree of specialization by the establishment of approximately 18 operating divisions of the National Defense Research Committee (one such division will specialize in metallurgical problems). Some of these divisions will in turn be broken down into sections which will specialize in research work on war weapons in a very limited field. Subsequent to this reorganization as well as at the present time, the flow of recommendations will be from (i) National Defense Research Committee sections to (ii) National Defense Research Committee divisions to (iii) the members of National Defense Research Committee, who in turn will make recommendations to Dr. Bush, enabling him to decide which contracts should be executed. After approval, all the business aspects of contracts are handled by the executive secretary, Dr. Irvin Stewart, under whom operates the administrative office concerned with priorities, personnel, accounts, etc.

Subsequent to the execution of contracts with nongovernmental educational institutions and business organizations, the representatives of the particular National Defense Research Committee section where the project originated have the duty of supervising the performance of the research investigations by the contractors as far as their technical and scientific aspects are concerned. Such supervisory duties include the duty of making recommendations through the National Defense Research Committee division to the members of National Defense Research Committee, who in turn make recommendations which enable Dr. Bush to make the ultimate decision as to whether or not the work under particular contracts should be extended or terminated.

COMMITTEE ON MEDICAL RESEARCH

It is the duty of the Committee on Medical Research to implement in the field of medical research the broad decisions of policy made by Dr. Bush with the advice and assistance of the Office of Scientific Research and Development Advisory Council by handling the details of recommending and administering specific contracts with nongovernmental institutions (usually medical schools and medical research institutions). The Committee on Medical Research has utilized for operating purposes the various subcommittees of the Division of Medical Sciences of the National Research Council, which were already in existence at the time of the establishment of the Committee on Medical Research. These subcommittees perform in the field of medical research functions analogous to those performed by the National Defense Research Committee sections and divisions in the field of research on war weapons. Specific contract proposals originating with research organizations are reviewed by these subcommittees, and recommendations are made to the Committee on Medical Research. As at all other levels in the Office of Scientific Research and Development hierarchy, the Army and Navy are represented on the Committee on Medical Research, as is the Federal Security Agency. The representatives of the War and Navy Departments and of the Federal Security Agency on the Committee on Medical Research

Digitized by Google

are selected by the Secretaries of War and Navy and the Federal Security Administrator from the staffs of the Surgeons General of the Army, Navy, and the Public Health Service respectively. Thus, it is possible for the governmental institutions primarily interested in war medical research to examine each specific contract proposal and make recommendations thereon before its adoption. If the members of the Committee on Medical Research react favorably to a proposal, the Committee on Medical Research recommends to Dr. Bush that a contract be negotiated, and on the basis of this recommendation Dr. Bush decides whether or not a contract should be executed.

The contractors' research work under Office of Scientific Research and Development contracts recommended by Committee on Medical Research is supervised by a technical staff serving the Committee on Medical Research and by representatives of the subcommittees of the Committee on Medical Research which considered the particular project. These subcommittee members have the duty of recommending to the Committee on Medical Research whether the work under the contract should be extended or terminated, and the Committee on Medical Research in turn makes a recommendation to Dr. Bush to enable him to make the final determination.

RELATIONSHIP OF THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT TO NATIONAL ACADEMY OF SCIENCE AND THE NATIONAL RESEARCH COUNCIL

The above description of the Office of Scientific Research and Development organization indicates that the Office of Scientific Research and Development has utilized the services of the National Academy of Sciences and the National Research Council in several instances. Specifically, the present relationship can be summarized as follows:

(1) In the National Defense Research Committee field (war weapons), (a) the metallurgical work is now being supervised by a National Research Council committee, and in the pending reorganization this metallurgical work will be centralized in one of the contemplated 18 divisions of the National Defense Research Committee; the new division will be headed by the Chairman of the War Metallurgy Committee of the National Research Council and will work closely with that committee.

(b) Problems in the selection and training of service personnel are reviewed and recommendations made to the National Defense Research Committee by a committee of the National Research Council.

(2) In the Committee on Medical Research field (medical research), various subcommittees of the Division of Medical Sciences of the National Research Council have been acting in advisory capacities;

(3) The Office of Scientific Research and Development has executed several contracts whereby the National Academy of Sciences has agreed to conduct certain necessary experimental studies and investigations in the field of war weapons; and

(4) Under congressional authorization, the Office of Scientific Research and Development has transferred funds directly to the National Academy of Sciences. For example, the First Supplemental National Defense Appropriation Act, 1943, authorized the Office of Scientific Research and Development to transfer $113,790 to the National Academy of Sciences to defray certain administrative and overhead expenses incurred in carrying out research projects for Federal agencies during the fiscal year 1943.

SPECIAL SECTIONS OF THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

In addition to projects handled through regular National Defense Research Committee and Committee on Medical Research channels, from time to time the armed services call upon the Office of Scientific Research and Development to handle special projects which are administered by separate sections set up for that purpose directly under the supervision of Dr. Bush. These special projects are generally financed by means of funds which are transferred to the Office of Scientific Research and Development by either the Army or the Navy (depending upon which is interested).

Digitized by Google

Information concerning Office of Scientific Research and Development contracts from June 27, 1940 through Nov. 30, 1942

	Academic institutions	Industrial concerns	Government agencies	Total
Instruments of warfare:				
Number of contracts authorized	895	828	38	1,761
Dollar value of contracts authorized	66,730,865	31,575,931	4,053,160	102,359,956
Total contracts signed	792	599		1,391
Contracts under negotiation or processing	103	230	38	370
Contracts terminated	234	203		437
Contracts in force	558	396		954
Medical research:				
Number of contracts authorized	371	4	14	389
Dollar value of contracts authorized	4,273,496	41,976	256,853	4,572,325
Total contracts signed	330	4		334
Contracts under negotiation or processing	41	0	14	55
Contracts terminated	25	1		26
Contracts in force	305	3		308
Total (Office of Scientific Research and Development):				
Number of contracts authorized	1,266	832	52	2,150
Dollar value of contracts authorized	71,004,361	31,617,907	4,310,013	106,932,281
Contracts signed	1,122	603		1,725
Contracts under negotiation or processing	144	229	52	425
Contracts terminated	259	204		463
Contracts in force	863	399		1,262

NUMBER OF DIFFERENT CONTRACTORS

Academic institutions	107
Industrial concerns	173
Government agencies	12
Total	292

Office of Scientific Research and Development Personnel (by number of appointments), as of Dec. 1, 1942

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

Without compensation (total)		86
Director	1	
Executive secretary	1	
Liaison officer	2	
Special assistant	5	
Consultant	46	
Member	16	
Special representative	3	
Official investigator	9	
Section chairman	2	
Executive officer to director	1	
Paid personnel (total)		246
Technical aide	16	
Administrative and clerical	230	
Total without compensation and paid personnel		332

Digitized by Google

NATIONAL DEFENSE RESEARCH COMMITTEE

Without compensation (total)		1,089
Chairman	1	
Executive officer to Chairman	1	
Committee chairman	2	
Special assistant	2	
Consultant	328	
Technical aide	8	
Member	212	
Special representative	8	
Official investigator	430	
Section chairman	49	
Section vice chairman	24	
Division chairman	6	
Division vice chairman	8	
Subcommittee chairman	10	
Paid personnel (total)		207
Technical aide	82	
Administrative and clerical	125	
Total without compensation and paid personnel		1,296

COMMITTEE ON MEDICAL RESEARCH

Without compensation (total)		290
Executive secretary	1	
Chairman	1	
Vice chairman	1	
Consultant	11	
Member	5	
Official investigator	1	
Responsible investigator	270	
Paid personnel (total)		14
Technical aide	5	
Administrative and clerical	9	
Total without compensation and paid personnel		304
Total Office of Scientific Research and Development (Office of Scientific Research and Development, National Defense Research Committee, Committee on Medical Research:		
Without compensation		1,465
Paid		467
Grand total without compensation and paid		1,932

EXHIBIT No. 73

EXECUTIVE ORDER

ESTABLISHING THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT IN THE EXECUTIVE OFFICE OF THE PRESIDENT AND DEFINING ITS FUNCTIONS AND DUTIES

By virtue of the authority vested in me by the Constitution and the statutes of the United States, and in order to define further the functions and duties of the Office for Emergency Management with respect to the unlimited national emergency as declared by the President on May 27, 1941, for the purpose of assuring adequate provision for research on scientific and medical problems relating to the national defense, it is hereby ordered:

1. There shall be within the Office for Emergency Management of the Executive Office of the President the Office of Scientific Research and Development, at the head of which shall be a Director appointed by the President. The Director shall discharge and perform his responsibilities and duties under the direction and supervision of the President. The Director shall receive compensation at such

Digitized by Google

rate as the President shall determine and, in addition, shall be entitled to actual and necessary transportation, subsistence, and other expenses incidental to the performance of his duties.

2. Subject to such policies, regulations, and directions as the President may from time to time prescribe, and with such advice and assistance as may be necessary from the other departments and agencies of the Federal Government, the Office of Scientific Research and Development shall:

a. Advise the President with regard to the status of scientific and medical research relating to national defense and the measures necessary to assure continued and increasing progress in this field.

b. Serve as the center for the mobilization of the scientific personnel and resources of the Nation in order to assure maximum utilization of such personnel and resources in developing and applying the results of scientific research to defense purposes.

c. Coordinate, aid, and, where desirable, supplement the experimental and other scientific and medical research activities relating to national defense carried on by the Departments of War and Navy and other departments and agencies of the Federal Government.

d. Develop broad and coordinated plans for the conduct of scientific research in the defense program, in collaboration with representatives of the War and Navy Departments; review existing scientific research programs formulated by the Departments of War and Navy and other agencies of the Government, and advise them with respect to the relationship of their proposed activities to the total research program.

e. Initiate and support scientific research on the mechanisms and devices of warfare with the objective of creating, developing, and improving instrumentalities, methods, and materials required for national defense.

f. Initiate and support scientific research on medical problems affecting the national defense.

g. Initiate and support such scientific and medical research as may be requested by the government of any country whose defense the President deems vital to the defense of the United States under the terms of the Act of March 11, 1941, entitled "An Act Further to Promote the Defense of the United States"; and serve as the central liaison office for the conduct of such scientific and medical research for such countries.

h. Perform such other duties relating to scientific and medical research and development as the President may from time to time assign or delegate to it.

3. The Director may provide for the internal organization and management of the Office of Scientific Research and Development and may appoint such advisory committees as he finds necessary to the performance of his duties and responsibilities. The Director shall obtain the President's approval for the establishment of the principal subdivisions of the agency and the appointment of the heads thereof.

4. In carrying out its functions, the Office of Scientific Research and Development shall utilize the laboratories, equipment, and services of governmental agencies and institutions to the extent that such facilities are available for such purposes. Within the limits of funds appropriated or allocated for purposes encompassed by this Order, the Director may contract with and transfer funds to existing governmental agencies and institutions, and may enter into contracts and agreements with individuals, educational and scientific institutions (including the National Academy of Sciences and the National Research Council), industrial organizations, and other agencies, for studies, experimental investigations, and reports.

5. The Director is authorized to take over and carry out the provisions of any contracts which fall within the scope of this Order heretofore entered into by (1) the National Defense Research Committee, established by order of the Council of National Defense on June 27, 1940, (2) the Health and Medical Committee, established by order of the Council of National Defense on September 19, 1940, and (3) the Federal Security Administrator in his capacity of Coordinator of Health, Medical Welfare, Nutrition, Recreation, and other related activities as authorized by order of the Council of National Defense on November 28, 1940. The Director is further authorized to assume any obligations or responsibilities which have heretofore been undertaken by the above agencies for and on behalf of the United States Government and which fall within the scope of this Order.

6. There is created within the Office of Scientific Research and Development an

Digitized by Google

advisory Council consisting of the Director as Chairman, the Chairman of the National Advisory Committee for Aeronautics, the Chairman of the National Defense Research Committee (hereinafter described), the Chairman of the Committee on Medical Research (hereinafter described), one representative of the Army to be designated by the Secretary of War, and one representative of the Navy to be designated by the Secretary of the Navy. The Council shall advise and assist the Director with respect to the coordination of research activities carried on by private and governmental research groups and shall facilitate the interchange of information and data between such groups and agencies.

7. There shall be within the Office of Scientific Research and Development a National Defense Research Committee consisting of a chairman and three other members appointed by the President, and in addition the President of the National Academy of Sciences, the Commissioner of Patents, one officer of the Army to be designated by the Secretary of War, one officer of the Navy to be designated by the Secretary of the Navy, and such other members as the President may subsequently appoint. The National Defense Research Committee shall advise and assist the Director in the performance of his scientific research duties with special reference to the mobilization of the scientific personnel and resources of the Nation. To this end it shall be the responsibility of the Committee to recommend to the Director the need for and character of contracts to be entered into with universities, research institutes, and industrial laboratories for research and development on instrumentalities of warfare to supplement such research and development activities of the Departments of War and the Navy. Furthermore, the Committee shall from time to time make findings and submit recommendations to the Director with respect to the adequacy, progress, and results of research on scientific problems related to national defense.

8. There shall be within the Office of Scientific Research and Development a Committee on Medical Research consisting of a Chairman and three members to be appointed by the President, and three other members to be designated respectively by the Secretary of War, the Secretary of the Navy, and the Administrator of the Federal Security Agency. The members so designated by the Secretaries of War, and Navy, and Federal Security Administrator shall be selected from the respective staffs of the Surgeons General and the Surgeon General of the Public Health Service with particular reference to their qualifications in the field of medical research. The Committee on Medical Research shall advise and assist the Director in the performance of his medical research duties with special reference to the mobilization of medical and scientific personnel of the Nation. To this end, it shall be the responsibility of the Committee to recommend to the Director the need for the character of contracts to be entered into with universities, hospitals, and other agencies conducting medical research activities for research and development in the field of the medical sciences. Furthermore, the Committee shall from time to time, on request by the Director, make findings and submit recommendations with respect to the adequacy, progress, and results of research on medical problems related to national defense.

9. The members of the Advisory Council the National Defense Committee the Committee on Medical Research and such other committees and subcommittees as the Director may appoint with the approval of the President shall serve as such without compensation, but shall be entitled to necessary and actual transportation, subsistence, and other expenses incidental to the performance of their duties.

10. Within the limits of such funds as may be appropriated to the Office of Scientific Research and Development or as may be allocated to it by the President, the Director may employ necessary personnel and make provision for necessary supplies, facilities, and services. However, the Director shall use such statistical, informational, fiscal, personnel, and other general business services and facilities as may be made available to him through the Office for Emergency Management.

FRANKLIN D. ROOSEVELT.

THE WHITE HOUSE,
June 28, 1941.

Digitized by Google

EXHIBIT No. 74

DETROIT, MICH., *May 9, 1942.*

Hon. H. M. KILGORE,
Chairman, Subcommittee on Technological Mobilization,
Committee on Military Affairs, United States Senate,
Washington, D. C.

DEAR SENATOR KILGORE: I have read, in the April 25 issue of Chemical and Engineering News, the letter sent you by the board of directors of the American Chemical Society with regard to your bills, S. 607 and S. 702.

I wish to state that I am not in agreement with the sentiments expressed in that letter and I sincerely doubt the statement expressed by the board that they "believe the membership of the society is almost unanimously" opposed to these bills. From my contacts with fellow chemists I believe most of them do not know the intent of these bills or are not opposed to them. The American Chemical Society is almost completely dominated by employers and those allied with them, and they naturally are opposed to anything which would deprive them of their opportunities to exploit the training and ingenuity of chemists for the purpose of profit.

I believe the testimony of Judge Thurman Arnold before your committee to be a very clear expression of the facts and agree heartily with it.

The American Chemical Society board of directors took it upon themselves to speak for the society without either canvassing the membership or publishing a complete copy or review of your bills.

Will you please send me copies of your bills for my information, since I do not know all their details. Although I may not be in accord with every detail of your bills, I agree with the purpose in divorcing scientific research from profit, since profit always takes precedence over the acquisition of knowledge.

Very truly yours,

J. D. QUIST.

EXHIBIT No. 75

MAY 24, 1943.

Mr. J. D. QUIST,
Detroit, Mich.

DEAR MR. QUIST: This will express my warm appreciation for your fine letter of May 9 regarding the decision taken by the board of directors of the American Chemical Society with regard to Senate bills 607 and 702.

I have already received a flood of letters from members of the American Chemical Society indignantly protesting the arbitrary action of their board of directors. It would seem highly desirable that the American Chemical Society seek a more democratic expression from their membership and make available to them pertinent information regarding these legislative measures; particularly the science mobilization bill, S. 702.

I am enclosing for your information copies of these bills, a résumé of the salient features of S. 702 and the full testimony of Judge Thurman Arnold before this committee and would welcome your comments and recommendations.

May I suggest that you and your associates can make a real contribution toward a fair decision on these matters by making your views known to your own congressional representatives.

Sincerely,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 76

PITTSBURGH, PA., *May 4, 1943.*

Hon. H. M. KILGORE,
Chairman, Subcommittee on Technological Mobilization,
Committee on Military Affairs, United States Senate,
Washington, D. C.

DEAR SENATOR KILGORE: It has come to my attention that the American Chemical Society through its secretary has written you in opposition to bills S. 607 and S. 702.

Digitized by Google

I am and have been for some years a member in good standing in the American Chemical Society. Unfortunately I do not have a sufficient knowledge of patent procedure to comment intelligently on the merits of the bills under consideration. I should like to point out, however, that it is no secret that the American Chemical Society is dominated by the large chemical companies and the policies of the society reflect the interests of these large corporations. It is not surprising, therefore, that the society should go on record as opposed to bills S. 607 and S. 702 since these bills seek to correct the abuses perpetrated by some of these same corporations.

I do not share the belief that the membership of the society "is almost unanimous in its opposition" to these bills and I assure you this statement by the society rests on no survey of the membership's opinion.

Sincerely yours,

MILTON ORCHIN.

EXHIBIT No. 77

MAY 26, 1943.

Mr. MILTON ORCHIN,
Pittsburgh, Pa.

DEAR MR. ORCHIN: I appreciate very much your letter of May 4 informing me that the American Chemical Society is dominated by the large chemical companies and that the policies of the society reflect the interests of these large corporations.

I am also glad to learn that the position of the society in opposing S. 702 does not express the views of its membership.

Those of us who believe that careful planning is required so that these energies may be used to the maximum benefit of mankind are naturally deeply concerned over the action taken by the American Chemical Society, but I feel confident that when they better understand the situation the majority will be as anxious as you and I are to have this legislation passed at once.

Your efforts to cooperate are very much appreciated.

Sincerely,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 78

AMES, IOWA.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

MY DEAR SENATOR KILGORE: I wish to register my protest to the recent disapproval of Senate bills 607 and 702 by the directors of the American Chemical Society.

I am a research chemist, and the chemists I am in contact with heartily endorse the above-mentioned bills. I believe the majority of chemists are not in favor of the directors arbitrary decision.

I can see a great increase in the service of science to society under the stipulations of the Kilgore bills and hope for their speedy enactment.

Very truly yours,

OLIVER JOHNSON.

EXHIBIT No. 79

MAY 22, 1943.

Mr. OLIVER JOHNSON,
Ames, Iowa.

DEAR MR. JOHNSON: This will express my warm appreciation for your recent letter indicating your approval of Senate bills 607 and 702. I have received a great many letters similar to yours which indignantly protest the decision of the directors of the American Chemical Society.

In a matter which is of such direct interest to each member of the American Chemical Society it seems reasonable to expect that the officers would formulate programs to stimulate discussion and constructive criticism of the science mobilization bill. I suggest that you and your associates might make a real contribution by making your views known to your own congressional representatives.

Digitized by Google

I am enclosing for your information material pertinent to both bills and will welcome your comments and recommendations concerning them.

Sincerely,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 80

THE CLEMSON AGRICULTURAL COLLEGE,
Clemson, S. C., April 29, 1943.

Senator H. M. KILGORE,
United States, Senate, Washington, D. C.

DEAR SENATOR KILGORE: This will thank you for the copy of Senate bill No. 702 which I have read with a great deal of interest.

You are to be commended for your thinking and actions toward developing a sound philosophy for America. You no doubt realize that this is a great country because of its fine institutions and we hope that they can contribute much more to the needs of a prosperous country after the war is over.

Many of the achievements, discoveries, and valuable assets of this country have been created by research individuals at a very low cost. It seems to me that it is a means of utilizing those who are research-minded in a manner that will greatly add to the values of this country. Then too we cannot have too many research men. There are millions of unsolved problems that could easily be studied by a much larger staff of research workers than this country now has.

Despite the fact that the pure research men have been very largely responsible for the airplane, the telephone, the electric light, for many chemical products, and for animal and plant breeding of note, they have received much less for their efforts than the semiapplied individuals. I hope that your bill will revive an interest in these pure research workers who may never appear in the newspapers but whose patience and contributions enhance the Nation. The land-grant colleges have fought much that has been classed as New Deal, because there has been little regard for the individuals who have brought agriculture to its present state of perfection and many of these new organizations with tremendous amounts of money have foreshadowed their efforts. After the war is over I hope that Congress will again give some cognizance to what is fundamental and basic in agriculture as compared to the so-called economics and sociology complexes that cannot, because of their very nature, emphasize a scientific approach.

I thank you for sending me a copy of the bill and hope that you may be successful in carrying it through. I shall call this matter to the attention of our congressional delegation.

Sincerely yours,

R. F. POOLE, *President.*

EXHIBIT No. 81

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Pasadena, May 31, 1943.

Senator H. M. KILGORE,
Senate Committee on Military Affairs, Washington, D. C.

DEAR SENATOR KILGORE: On April 26 you wrote to me stating that you hoped to call on me shortly to discuss the science mobilization bill. A copy of the bill was enclosed.

Since I have heard nothing further from you, I suppose that other demands on your time have prevented you from getting out here. I regret missing the opportunity of meeting you and discussing this proposed legislation with you. In accordance with your request, I am writing you some of my comments on the bill.

I am in entire agreement with you that the scientific and technical resources of this country are not now organized to make maximum contribution to our society, either for peace or war. In considering legislation to improve this situation, it seems to me the peacetime needs of the country are at least as important as the war needs, though the present emergency is bound to focus attention primarily on war needs. However, if our scientific and technical resources had been

Digitized by Google

organized for effective peacetime service, I believe there would now be less difficulty in meeting the war emergency.

Legislation to improve the utilization of science and technology should be based upon a thorough understanding of the reasons for present failure to obtain full utilization. In my opinion, the principal reason for this failure is that our scientific and technical resources have been developed primarily to serve private profit rather than national interest. Private profit has not always been consistent with the national interest, and there is abundant evidence that it may also be inconsistent with the war effort. I refer especially to private profit in the case of monopolistic enterprise. My chief criticism of the proposed legislation is that it fails to take this state of affairs into consideration. It seems to me that unless scientific and technical progress can be released to some extent from the primary obligation to serve private profit, then legislative efforts to improve matters are likely to achieve very little.

I note that the bill contemplates the creation of a new and independent Government agency, the Office of Scientific and Technical Mobilization. Very likely you have already considered the possibility that your purposes could be achieved through broadening the powers and functions of existing Government agencies, and you may have rejected this possibility for cogent reasons. But it seems to me that the functions of the Office of Scientific and Technical Mobilization, as set forth in the bill, overlap the functions of certain existing agencies, such as the Department of Agriculture, the National Bureau of Standards, the United States Bureau of Mines, etc. Is it not possible that agencies now charged primarily with scientific or technical work could be empowered to extend their attention to the economic and social aspects of their work? This might require an expansion of personnel, and an increase in expenditures, but it would seem to me more promising to tackle the problem through existing agencies rather than by setting up a new one.

I would welcome an opportunity to discuss these and other aspects of the bill with you personally, if there should be an opportunity. If this is impossible, I shall be glad to write you in greater detail, if you wish to have further comments from me.

Thanking you for your letter,

Sincerely,

ROBERT EMERSON,
Assistant Professor of Biophysics.

EXHIBIT No. 82

JUNE 15, 1943.

MR. ROBERT EMERSON,
Assistant Professor of Biophysics,
California Institute of Technology, Pasadena, Calif.

DEAR MR. EMERSON: When I was in Los Angeles the early part of May, I tried to reach you for a meeting that Dr. Elmet Belt held with a number of other scientists to discuss the science mobilization bill. Unfortunately, my schedule was so short that the meeting had to be called together on a little over a day's notice and we were unable to get in touch with you.

I am very grateful for the comments in your letter of May 31. I am in complete sympathy with your observations on the evil effects of monopoly in deterring scientific research and technical development. I had hoped that an adequate correction of this ill was included in the language of my bill. If not, I should be glad to know what wording you believe would carry this out.

Regarding the Office of Scientific and Technical Mobilization—the language of the bill does not spell out my ideas in as great detail as perhaps might be desirable. I envisage the Office of Scientific and Technical Mobilization as a small, centralized, coordinating clearing house carrying out its powers and functions just as far as it is able through the maximum utilization of existing agencies and facilities, such as the Department of Agriculture, the Bureau of Standards, the Bureau of Mines, etc. Only after all other existing mechanisms have been exhausted would the Office of Scientific and Technical Mobilization create new means of carrying out essential projects.

I would appreciate it greatly if you could glance through the enclosed copy of our previous hearings on this bill and on its predecessor S. 2721. This may

Digitized by Google

give you a further idea of what is projected by this legislation; and your additional comments on changes, additions, or deletions would be very helpful to me.

I do not intend to return to the coast in the near future, but if you should happen to be in Washington I am very anxious to talk with you.

Very sincerely,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 83

SOUTHWESTERN COLLEGE,
Winfield, Kans., April 22, 1943.

Hon. H. M. KILGORE,
Senate Office Building, Washington, D. C.

DEAR SENATOR KILGORE: This will acknowledge receipt of the copy of Senate bill 702, dealing with science mobilization, which you have introduced. The purpose back of the bill intrigues me greatly. I shall give it most careful consideration.

May I offer you the following suggestion: In the nature of the circumstances that obtain, it will be the large universities who do most of the research work. They have the elaborate, well-equipped laboratories that are essential for such projects. Recognizing this fact, it is easy to lose sight of the other fact, that the small liberal arts colleges make a real contribution in the training of personnel for research work. There are some distinct advantages inherent in the small college situation. I am thinking particularly of the way that small classes bring students into direct contact with the heads of departments in the critically important elementary courses. This has resulted in the small colleges of the United States sending a disproportionately large number of gifted and superior students into graduate study and research positions.

It almost inevitably works out in large universities that courses are given with student assistants giving much of the instruction, with a minimum of personal attention. It would seem to me that any program designed to stimulate and sustain the program of scientific research in America ought to give careful consideration to the underwriting of the small college program. This might be done in terms of scholarship aid, or gradute fellowships, or appropriations for laboratory equipment and increased library resources.

I shall write you again after I have had time to give the terms of the bill, as you have prepared it, consideration.

With all good wishes, I am,

Sincerely yours,

CHAS. E. SCHOFIELD, *President.*

EXHIBIT No. 84

HAVERFORD COLLEGE,
Haverford, Pa., April 30, 1943.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: I much appreciate your courtesy in sending me a copy of the science mobilization bill recently introduced in both Houses of Congress.

The objectives of this bill are undoubtedly of the most fundamental importance and the need for preventing the disintegration of scientific research in the universities and colleges is very real.

I cannot help wondering, however, whether certain of the functions suggested in the proposed legislation do not overlap the work of the National Research Council. That organization is so highly regarded in scientific circles that it would seem to be a good idea to prevent any possibility of duplication of function.

To put the matter another way, if your bill could carry the endorsement of the National Research Council, I believe the support of university and college personnel would be almost automatic.

Sincerely,

FELIX MORLEY.

Digitized by Google

EXHIBIT No. 85

FRIENDS OF THE ARMY MEDICAL LIBRARY,
Washington, D. C., June 3, 1943.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SIR: In reference to the authority in your bill, S. 702, for supervising the reorganization of the publication of the results of governmental scientific research—the phrase in section 1 (6) undoubtedly covers the subject in a general manner. Although this may be sufficient I believe the point is of such fundamental importance for the advancement of science and technology that a more specific instruction under section 4—Powers of the Office—would be more effective. I would suggest a paragraph under this section, such as "To coordinate the publication of reports of scientific research in a manner designed to insure their most widespread distribution to all capable of using them for the advancement of science."

This would call attention to the special need for such an activity on the part of the Office of Scientific and Technical Mobilization.

Since writing to you last, I have been disappointed at the lack of enthusiasm and apparent opposition to your bill by some of our scientific societies. The apprehension appears to be that such an Office of Scientific and Technical Mobilization would discourage and possibly interfere with private initiative in these fields. It is also intimated that everything needed along this line is already being done by private organizations which now exist.

Although it is certain that much has been accomplished by individual and collective efforts of the scientists and industrialists of the country, it should be evident to everyone that a greatly expanded and coordinated effort to advance science and technology is the one certain way of assuring the future welfare of our own and other peoples throughout the world.

This means of raising the standards of living is of no less importance than providing for the health and well-being of the Nation, by means of an efficiently organized Public Health Service.

You certainly have my admiration for the foresight which has prompted you to introduce your bill, S. 702.

Yours very sincerely,

ATHERTON SEIDELL.

EXHIBIT No. 86

Washington, D. C., April 27, 1943.

Hon. H. M. KILGORE,
United States Senate.

MY DEAR SENATOR: I have received your letter of April 23, addressed to me at the National Bureau of Standards (from which I have now been retired), enclosing a copy of the bill S. 702, and a summary of its provisions.

The purposes of the bill, to promote the maximum utilization of our scientific and technical resources, facilities, and personnel, are admirable. As to the plan proposed, it seems to be an excellent start. Difficulties will always arise, as hindsight is better than foresight, but these difficulties can be amended as they may discover themselves. All that is necessary is to keep in mind the end to be attained, and profit by mistakes, if any.

One thing should be made clear by those who are putting this bill through—that there is no intention of carrying planning so far as to stifle individual genius.

It is related that at one time a high British official come to see Faraday in his laboratory. He had heard much about Faraday's discoveries, and knew little about the subject. Faraday showed him a number of electrical experiments, until finally the official said: "What is the use of all this?" Faraday replied, "Perhaps some day you will be able to tax it."

I doubt if even Faraday visualized the multitudes of persons today who make their living in one branch or another of the electrical industries.

Very truly,

PAUL R. HEYL.

Digitized by Google

EXHIBIT No. 87

NORTHWESTERN UNIVERSITY,
Evanston, Ill., May 5, 1943.

Hon. H. M. KILGORE,
Committee on Military Affairs,
United States Senate, Washington, D. C.

DEAR MR. KILGORE: This will acknowledge your communication of April 23 concerning S. 702, the science mobilization bill. I am writing to you to indicate that while I believe that this is a step in the right direction, the failure to include specifically the social sciences is a very serious defect in my opinion.

As one working in a field which cuts across the natural sciences, the social sciences, and the humanities, I have been increasingly impressed with the absolute need to unify scientific endeavor in all fields. It is apparent that many of the problems arising out of the development of technical competence derive from the fact that we are not alert to social implications.

Therefore, I hope your bill can be amended in such a way as to insure that the proposed Office of Scientific and Technical Mobilization will include in its administrative staff, its board and its technical committee, a full representation of social scientists who, working with the representatives of the exact and natural sciences, will insure that our technical development will be geared in with a full consideration of the human problems arising out of such development.

Very truly yours,

MELVILLE J. HERSKOVITS.

EXHIBIT No. 88

UNIVERSITY OF MICHIGAN,
Ann Arbor, Mich., April 28, 1943.

Hon. HARLEY M. KILGORE,
Senate Office Building,
Washington, D. C.

DEAR SENATOR: I appreciate the privilege of reading your bill to mobilize the scientific and technical resources of the Nation, and your invitation to offer suggestions thereon. I have little to say in the way of general considerations, as I regard the bill is very carefully conceived and well worded. The declaration of policy is admirable.

Any ideas I may contribute deal with matters in which I have had some personal contact. The most pressing single matter with which I have been concerned recently is that of available personnel for research and administration of natural resources. The need for efficient administrators of the Federal conservation agencies is particularly vital now (as I indicated in 1939 to Mr. Ickes, in connection with my investigation of fisheries administration in Alaska). At a recent session of the technical committee of the American Wildlife Institute I discussed this matter in some detail with the institute's president (Senator Walcott). This is how the question looked to us: Among the remaining men charged with the development and safeguarding of our wildlife resources, the majority, numbering about 500, are liable to military duty. They would add less than one man per division. Yet without the continued service of these men the wildlife resources, including the fisheries, are threatened. A sharp depletion of the renewable resources cannot be justified, if for no other reason than that we might be left in a terrible predicament if such depletion is allowed to take place. As the world goes, we are not suffering very seriously now for lack of food and other sustaining elements, to which wildlife heavily contributes. Desperate straits will likely be reached, if ever, only after years of war. We may (or may not) expect and trust that we may be spared that fate—but it would be folly not to prepare for such an eventuality. If, then, our sustaining resources should be badly depleted, we would suffer, perhaps fall. Similar arguments could be made—and rightly—for other lines of scientific and technical service.

The provision in your bill for the designation of certain scientific professions as "essential" fields is good and I hope not "too little and too late." Many keymen have been lost to research and technology already. Some provision by which the most irreplaceable might be returned to scientific work would be valuable.

Digitized by Google

A point that has been altogether too much overlooked is that, in many lines of scientific and technological work, it takes about 6 to 10 years to train a man well in theoretical aspects of the science or art; he needs then spend an apprenticeship before he becomes a really effective producer. In contrast it takes a few months, at most a year or two, to make a good soldier. Relatively few are capable of leadership in science; millions make good soldiers.

I take it, it is the new manpower policy to keep in training some young men in medicine and a few other technical fields, so that replacements will be coming along when and if most sorely needed. This policy should be broadly extended so that reserves will not be lacking in any technical field—for the war and for reconstruction. The Office of Scientific and Technical Mobilization might well be charged specifically with the responsibility of seeing to it that the country shall not be left at any time without such reserves in its army of scientific workers.

I am not wholly clear, on reading the bill, just how existing agencies, such as the Bureau of Standards and the National Academy of Sciences, would be integrated into the new office. How well the job is done will depend, I suppose, on the ability and tact of the Administrator.

Sincerely yours,

CARL L. HUBBS,
Professor of Zoology and Curator of Fishes.

EXHIBIT No. 89

UNIVERSITY OF MICHIGAN,
Ann Arbor, Mich., April 28, 1943.

Hon. H. M. KILGORE,
United States Senate,
Washington, D. C.

DEAR SENATOR KILGORE: I have read with interest the science mobilization bill which you were good enough to send me. Since I have some ideas regarding this bill, I am accepting your invitation to make comment.

In general I am in full sympathy with what I believe to be its purpose: To make more general public use of the American capacity for scientific advancement. The bill seems to me, however, to have certain faults which go back to a fundamental feature of scientific work. There is a rather clear distinction between advancement of science and application of science. Most of the great advances in science have been made through efforts to discover new truth without any thought of its value to man. Pure science often makes its discoveries in an accidental haphazard way. Not until a decade or a generation later does anyone learn how to use the new knowledge to ameliorate conditions of mankind. Applied science is thus merely the pure science of an earlier time. The former cannot advance without the latter.

It would be my hope that when the Federal Government fosters advancement of science, it will foster pure science along with, or ahead of, the applied. Perhaps this bill is supposed to do both. Perhaps if the right Administrator could be named, both pure and applied science would be aided. But the bill gives the Administrator a good many things to do which are pure organization. He is directed to do many things and is authorized to do many others. The set-up seems to put a premium on organization.

By the time the Administrator does all his mandatory organizational duties, he is not going to have much energy left to consider the correct relation of applied science to pure science. I would like to see the bill simplified. Cut down on the required activities, and give the Administrator some freedom to work out plans which he thinks will advance science.

Scientific men are roughly of two kinds—some are organizers, some are research men. Only rarely are both abilities combined to a high degree in the same person. Under the science mobilization bill as it stands, only an organizer could be happy in the Administrator's job. But I think the research type of man would do the country the most good in the long run. If the amount of necessary organization could be so reduced that a research man would be willing to undertake it, and then a research man appointed, I believe we stand to gain much through the fostering of research.

Sincerely yours,

A. FRANKLIN SHULL,
Professor of Zoology.

Digitized by Google

EXHIBIT No. 90

THE UNIVERSITY OF NORTH CAROLINA,
Chapel Hill, May 14, 1943.

Senator H. M. KILGORE,
Washington, D. C.

DEAR SENATOR KILGORE: Thank you for your courtesy in sending me a copy of your bill, S. 702. I have given this matter some thought, and have noted several discussions, in particular critical statements by officers of the American Chemical Society and the American Institute of Chemists, appearing in their official journals. Although I am a member of both these organizations, I am not necessarily influenced by the opinions of their officers, which I consider as expressions of their personal views. Rather, my social outlook coincides with that of the American Association of Scientific Workers, of which I am a vice president.

As a matter of fact, my mind is not entirely made up on this bill. I agree with most of your objectives, and, in particular, I think the interests of the public should be safeguarded as regards the use of patents. I do not believe that reasonable regulation in this field will choke off individual initiative as is so often alleged. There is one criticism of the bill, however, in which I do concur, and I believe that if this matter were corrected, the bill would be viewed with more favor by scientists in general. Namely, I believe that the direction of the proposed Office of Scientific Mobilization should be firmly in the hands of scientifically trained men. The administrator, in particular, should be a man of scientific attainment, and the board should probably have a majority of scientists on it, and these scientists should represent both the physical and the biological sciences. It would be, of course, necessary to have some safeguards to make sure that not too many of these scientists were in reality merely representatives of industrial interests.

I am, indeed, gratified by your interest in the training of men in the scientific professions. It would be a splendid thing if provision could be made for those of genuine talent who are now denied this training because of financial disabilities.

With best wishes,
Sincerely yours,

OSCAR K. RICE,
Associate Professor of Chemistry.

EXHIBIT No. 91

MAY 24, 1943.

Dr. OSCAR K. RICE,
Associate Professor of Chemistry, the University of North Carolina,
Chapel Hill, N. C.

DEAR DR. RICE: This will express my warm appreciation for your fine letter of May 14 concerning the science mobilization bill, S. 702. It is very encouraging to note the constructive attitude taken with regard to this measure by a great number of leading scientific people.

The recommendation that the direction of the proposed Office should be firmly in the hands of scientifically trained men only has frequently been made and I believe warrants further study. By way of explanation, I should like to offer for your consideration the point of view held by the authors of the bill at the time it was written.

First, it is necessary to provide for sufficient freedom of action for the Administrator of this Office and at the same time sufficient check on his operations. This we feel has been accomplished by granting him rather wide authority and also providing that the Scientific Board "have access to all information of the Office relating to the administration thereof." This would enable the Board to "smoke out" any unfavorable action of the Administrator to the President.

The second consideration is related to the make-up of the Scientific Board and committee. Since the decisions which these groups will be called on to make may directly affect the total economy of the Nation it is necessary that there be representation of broad branches of our economy. It should be borne in mind that these groups are policy-making bodies who will not necessarily deal with the scientific and technical aspects of any given problem but will be concerned with the implications of such a problem or project to our over-all economy. The scientific projects

Digitized by Google

which the proposed agency would consider would be formulated, planned, and executed solely by competent technical and scientific groups and committees chosen for their outstanding abilities in the particular scientific field with which the problem is concerned.

It seems also reasonable to expect that the representatives of the various groups on the Board and committee and even the Administrator himself will be either scientists in their own right or people intimately related to the scientific and technical interests of their respective groups. Of course, it would be most desirable that the Administrator be both a man of scientific attainment and competent in the field of administration. However, in drafting legislation it is not wise to rigidly define the type of person who would best administer the proposed office. In this connection it would be extremely helpful to have recommendations regarding the detailed qualifications for such a position from as many scientific people as possible.

I shall hope for your continuing support and will welcome all additional recommendations you may care to offer.

Sincerely yours,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 92

IOWA WESLEYAN COLLEGE,
Mount Pleasant, Iowa, May 11, 1943.

Senator HARLEY M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: In answer to your communication of April 17 requesting our comment on bill No. S. 702 I am enclosing a personal note to me from Dr. Harry Jaques, one of America's outstanding biologists. His textbooks are used throughout the Nation, and I know of no biologist with greater standing; therefore his comments are worthy of your consideration.

Sincerely yours,

STANLEY B. NILES, *President.*

EXHIBIT No. 93

MT. PLEASANT, IOWA, *May 1, 1943.*

DEAR PRESIDENT NILES: I have read this entire matter carefully and with considerable interest. It would seem to be a good and desirable provision to put into practice.

The question of Federal versus private control of any enterprise has many debatable angles. This seems to be a provision to aid private enterprise and to prevent it defeating its own best interests by overworked monopoly. As provided in the bill, there would seem to be scant chance of the office wrongly suppressing private enterprise.

The private scientist, inventor, or corporation needs to be assured of an adequate reward for successful achievements.

I feel that such a measure as this is even more desirable for the coming peace years than when we are in a state of war. The encouragement of scientific cooperation, the elimination of costly duplications of effort, and the restraint of monopoly is desirable.

The provisions for training and aiding scientists seem timely. It is particularly desirable in times like this that pure science research should not be severely hampered, for, directly or indirectly, through it come eventually many of our most practical discoveries. Encouragements in this training is essential to maintain a steady flow of trained personnel in applied fields. The office could apparently encourage scientific interest among children, also. There is much cheap talk and glorification of science by a doting public, but if our country is to retain its ability in scientific lines, genuine study and hard work will be essential.

Any measure leading to a more thorough training of our youth who have scientific interest and ability would be well worth while.

I hope I have done as you wished.

H. E. JAQUES.

Digitized by Google

EXHIBIT No. 94

UNIVERSITY OF MICHIGAN,
Ann Arbor, Mich., April 28, 1943.

The Honorable Senator HARLEY M. KILGORE and MEMBERS
OF THE UNITED STATES SENATE COMMITTEE ON MILITARY AFFAIRS,
United States Senate, Washington, D. C.

DEAR SIRS: Your science mobilization bill (S. 702, H. R. 2100) seems to me admirable, marking an essential step forward in our Government. More than in any other country in the world, the life of the citizens of the United States have been changed by scientific achievements. There has been here more widespread participation by all the people in such modern devices as telephone, radio, automobile, and the like.

The cartel disclosures have revealed that in aluminum, for example, and also in electricity, etc., private corporations have been able to keep the scientific achievements away from our citizens by legal chicanery, preventing proper production and even general introduction of the advances of modern science. The efforts of large corporations to prevent the completion of the great electrical projects which are now in full swing are also well known.

It seems to me that you should incorporate a provision in your bill to protect the national interest on every occasion in which scientific experts—and often pseudo experts—are called in to testify in Senate and congressional hearings on any bill involving scientific matters. Any experts who are to testify should be required in advance to submit in writing a sworn statement as to their paid connections with industry and corporations. Your proposed office should be charged with the responsibility of furnishing competent scientists whose only interest will be the public and national interest.

Enclosed is a document involving a resolution which I, as a delegate of the History of Science Society, introduced on January 29, at the annual meeting of the American Council of Learned Societies. It is pertinent to the work of your committee.

LOUIS C. KARPINSKI,
Professor, Mathematics Department.

EXHIBIT No. 95

HISTORY OF SCIENCE SOCIETY,
Ann Arbor, Mich.

To the Members of the History of Science Society, and the Delegates at the Twenty-fourth Annual Meeting, American Council of Learned Societies.

GENTLEMEN: As a delegate to the twenty-fourth annual meeting of the American Council of Learned Societies which was held in New York January 28–29, 1943, it seems obligatory to me to report to the History of Science Society—and to the delegates to that meeting—two matters which seem to me to call for some action if there is to be any good to result from the annual meetings.

(1) There was an extended report on the modern language program of the American Council of Learned Societies which, I regret to say, seemed to me to be particularly designed to discredit the Army and Navy programs, even those established and in running order. It is in the highest degree unfortunate that any council of learned societies should lend itself to any suspicion of anything but disinterested concern for the welfare of science and learning. Mr. Graves gave a proper account of the activities of the American Council of Learned Societies connected with the Provost Marshal's office. However, upon my query whether other courses in language training were not in progress in many universities, Mr. Graves replied to the effect that every college in the country had some program, with some depreciating remarks concerning these. I pressed the point and did succeed in securing an admission that there were courses in Japanese and other languages under the Regular Army services and the Navy at the University of Michigan, at Colorado, in California (at several institutions, I believe), and at Oregon; further, that these were not at all any hysterical projects, as had been implied by Mr. Graves. In any proper survey of the language courses planned and projected these activities should have been mentioned, as these involve some thousands of students. So far as the Provost Marshal's projects are concerned—

Digitized by Google

largely, I believe, for post-war activities—it appears that there is some question whether any funds have been appropriated for such language developments. The Army has complained about the pressure brought on the Army by one at least of the projects apparently supported by the American Council of Learned Societies, which seems to have deserved the criticism. In any event, the major active going projects involving hundreds of students of Japanese, Chinese, etc., are these which were absolutely ignored by Mr. Graves' report.

Whatever motive inspires the American Council of Learned Societies to undertake a language program at the present time should motivate the American Council of Learned Societies not even in appearance to lend itself to all too common attempts to smear Government (Army or Navy) projects which are under way.

(2) Professors and scientists in governmental employ allied with great corporations.—The bottleneck in production for war purposes of aluminum, carboloys, artificial rubber, magnesium, and other metals was largely occasioned by the cartel agreements arranged by such corporations as Standard Oil with German and Japanese agents. To overcome this it developed that the opening of smaller units for treating sponge iron, for different treatment of aluminum ores to use poorer ones, and the like, was absoutely essential to any success in speed. To this end Secretary Ickes attempted to secure help along these lines from the National Academy of Sciences, from the Geological Survey, the Bureau of Mines, and other governmental agencies scientific in character. In almost every instance Secretary Ickes found that the men assigned to give him aid were men having private contracts with the larger corporations and that the advice given was that which would serve the interests of the larger corporations, served on the side by these professors and scientists.

In view of the publicity given to this justified attack upon professors in our universities and scientists in Government services, both supposed to serve first the public interest, it seemed to me imperative for some of the great organized groups of scientists and scholars such as the various councils of social service, national research, education, and learned societies, to make some definite effort to restore the scholars and professors to their former position in the public confidence by explicit mention in college catalogs of the connections of college and university teachers with private industry.

To this end I introduced the following resolution at the annual meeting of the American Council of Learned Societies:

"*Resolved*: The American Council of Learned Societies regard with disapproval the extensive inroads made into university and college staffs of America by great corporations and public utilities; these have been revealed somewhat accidentally, and most unfortunately in connection with legal actions or other actions affecting the public interest.

"In all matters of the public interest, the American Council of Learned Societies affirms its belief that in a democracy the professors in universities and colleges should serve only the public interest.

"We recommend to the university and college administrative officers that all teachers in institutions of higher learning be required to note to their college officials their contractual connections with corporations or private or even public utilities. These connections should be noted after the teachers' names in some readily accessible publication for each institution, so that any pronouncements may be judged by the public and the press as to whether such pronouncements emanate from a financial interest or from an academic (unpaid) interest in the public welfare."

Insofar as governmental agencies are concerned, there is a possibility that a resolution may be introduced into Congress requiring any so-called experts appearing to testify before any congressional committees that these men be required to register under oath their paid connections with private interests. The various councils should be concerned to support such action.

While I am signing this statement as president of the History of Science Society, concerning whose devotion to the service of truth in science there is no question, this communication is not paid out of their funds. It would be a matter of great interest to the writer if those who have some belief in the point of view regarding the public interest of scholars which I have tried to represent would consider bringing this matter to the attention—and the action—of the societies concerned with which they are affiliated. Correspondence is invited in furtherance of the aims stated.

LOUIS C. KARPINSKI,
President, History of Science Society.

Digitized by Google

EXHIBIT No. 96

HISTORY OF SCIENCE SOCIETY,
Ann Arbor, Mich., June 4, 1943.

Hon. HARLEY M. KILGORE,
Chairman, Senate Committee, S. 702,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: Few people realize the extent to which corporate and vested interests, such as privately owned utilities, have gained control of the opinions of technical experts, supposedly in primary employment of universities, colleges, and technical bureaus of the United States Government, and even State scientific bureaus. This situation holds particularly with reference to engineers, chemists, electrical experts, political science experts of many categories, etc. These gentlemen have unfortunately regarded their services and their opinions as for sale to the highest bidder, naturally secretly on the side. In consequence, your Committee on the Office of Science and Technology begins to have a howl from the engineering societies and some other scientific societies. College presidents, too, will be out in force at the threat to our free and democratic institutions. I fear they believe there will no longer be an open market for our freedom and democracy in science. The college presidents will be put to it to find the money for decent salaries which has so long been supplemented at Harvard, at Yale, at Michigan, at Massachusetts Institute of Technology, and at a hundred other institutions; witness the record in the nauseating tale of the National Electric Light Association, which tried unsuccessfully to remove the stench by renaming itself the Edison Institute, but it is still no rose.

I have noted the fear that politicians will dominate in some mysterious way our science and our technology. At least the politicians change from time to time and thus the public interest gets a break as it never has with the great utilities. The Standard Oil cartels, the various attempts of the united gas and electric privately owned utilities to keep the public from the enjoyment of the benefits of modern science as found in electricity and in artificial and natural gas, the Aluminum Co. of America together with a score of other minor but powerful companies have gained control of important fields by cartel agreements absolutely contrary to the public interest. These great corporations are definitely responsible for the lives of thousands of our American boys that will be sacrificed because we did not have the aluminum, the rubber, the electrical capacity, etc., in time as we would have had if democratic process had been allowed to function. These same organizations have already made their plans to seize control after the war ends by similar methods supposedly for the preservation of our democratic institutions, however, as represented by corporate cartel agreements.

No politicians could be as vile, as quick to suborn perjury, and as deliberate in instigating even murder, on occasion, to attain their ends than these corporate groups have been. Science and our technical processes, as applied in America and in the world, for the common man will be far safer in your hands—I mean in the hands of the United States Congress—than they are now. The scientific organizations are dominated often by men whose morality permits them to sell out the public interest. Compel the scientists if they wish to have their opinions respected to register their on-the-side jobs, or fees received from corporate interests other than the universities. Publish their names and their connections and then use as advisors, those men who have no entagling alliances.

Somehow your committee should see to it that these great corporations such as Standard Oil and Alcoa, that they should not receive gifts from the United States Government of plants and equipment for artificial rubber, for aluminum that will enable them to repeat after this war the tricks which they practiced on the American people before the war. The cartel agreements are a record of foul play against the people and against the Government. That "damned spot" can never be wiped out.

LOUIS C. KARPINSKI.

Digitized by Google

EXHIBIT No. 97

SWEET BRIAR COLLEGE,
Sweet Briar, Va., May 24, 1943.

Hon. H. M. KILGORE,
United States Senate.

MY DEAR SENATOR: I am wholly in accord with the purpose of the science mobilization bill, of which you kindly sent me a draft, and I wish to thank you most heartily for the courtesy you have shown in giving me this opportunity to become acquainted with the character of this proposed legislation, and to express my opinion regarding it.

As to your invitation for "comments and recommendations," I would first suggest that a few of our scientists who are known for their good judgment and common sense be invited to appear before your committee and give you the benefit of their knowledge and wisdom toward drawing up the most effective measure possible for the accomplishment of your aim. But I have little doubt that you have already thought of this yourself, and probably acted on it.

Second, I believe the intelligent people of the country are very weary of political appointments, and I therefore suggest that you take into consideration the advisability of having the administrator of your new office not appointed by the President, but elected by the A. A. A. S. as representing the scientists of the country, or perhaps the A. A. A. S. might nominate three persons from whom the President could appoint one to the office. Something of the sort might also be applied to subordinate appointments.

Third, I think we are also fed up on multiplication of bureaus, and so that instead of making this office an additional one, it might be organized as knitting together of various existing bureaus, such as standards, fisheries, surveys, etc., under strong and unified control.

With sincere wishes for the successful fruition of your endeavor, I am,

Yours faithfully,

PRESTON EDWARDS.

EXHIBIT No. 98

THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, INC.,
Fort Worth, Tex., December 22, 1942.

Senator HARLEY M. KILGORE,
Committee on Military Affairs,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: Your letter of November 27 to Mr. Hull, business manager of the American Association of Petroleum Geologists, has been referred to me. I wish to apologize in not answering sooner as the letter was received in Tulsa on December 9 and immediately forwarded to me, but on account of my absence from the office I have not had the opportunity of answering same.

As president and chairman of the national service committee of the American Association of Petroleum Geologists, I believe that I have had ample opportunity to study the past and present situation with respect to the application of such study to Senate bill No. 2721 on technological mobilization as sponsored by you, and I can assure you that it meets with the strongest and heartiest approval of many geologists.

I would like to inform you in as brief manner as possible of the history of the geological profession, and especially that of the petroleum geologists in the war effort. Even prior to December 7, the American Association of Petroleum Geologists became interested in the mobilization of the manpower of this group for the effective and efficient utilization in our group in the event of an emergency. After December 7, questionnaires were sent out to not only all members, but also former and nonmembers of our association. Our response was most favorable and satisfactory. The object of our questionnaire was to have detailed information on the training and experience not only in the United States but also in foreign countries, and in addition to that, any experience in other scientific fields, other than geology. Another thing taken into consideration was that the questionnaire of the national roster of scientific and specialized personnel did not cover our field in sufficient detail to outline all of the technical skills, training and experience of our members. After receiving our own questionnaires, the evaluation committee of the American Association of Petroleum

Digitized by Google

Geologists made a detailed inventory of all the special skills of every individual. Among such tabulated information were such types of technical skills as experience and ability to do topography, administration, geophysical engineering, interpretation of aerial photographs, fields of geological experience, both domestic and foreign, miscellaneous scientific interests and experience, languages, military record, draft classification, and many other items of important information.

During the years 1941 and 1942, our national service committee has done considerable work in calling to the attention of the military authorities that the skills of the geologist could be utilized very effectively and efficiently when used as geologists in their programs. The war effort committee of the Geological Society of America has worked along similar lines, and we cooperated with that committee in every respect. Up to the present time our program has only been partially successful, and if your program had been in effect, in my opinion, our results would have been 100 percent. Our greatest difficulty is that military men are not acquainted with the work of geologists, and especially the application of that science to military problems and the war effort. The geologist has had very extensive training and experience in topography and terrain studies—very important in military operations—specialized skill in the interpretation of aerial photographs, experts on map making and interpretation, specialists on geological engineering problems such as water supply, location of construction materials, road building, location and construction of advance airfields, etc. The geologist is making a very valuable contribution to the discovery and development of vital natural resources such as petroleum reserves and strategic minerals.

In World War No. 1 the geologist was attached to the Corps of Engineers and rendered very valuable service in geological engineering work. However, in this war, he could be attached to practically every branch of service and be a valuable asset when used as a geologist rather than in a capacity where his training and experience could not be utilized. For this reason we have attempted to propose that a geological corps be established in a similar position as the Corps of Engineers and Chemical Warfare, and that the chief geologist be attached to the general staff and individual units of specialists attached and assigned to the different branches of service. Up to the present time we have been only successful in placing many of our men in the Army Air Corps as intelligence officers and interpreters of aerial photographs.

There were approximately 4,000 geologists in the United States, and of this number it is estimated that 500 are in the military service and 150 in civilian capacities with governmental agencies directly connected with the war effort. Of those in military service, I would say that only about 125 are in positions where a part of their training and experience as geologists can be utilized; the balance have been scattered through the armed forces in such a way that they will not have an opportunity of giving valuable geological advice. As an example, I know of some good experienced geological engineers who, when drafted, were assigned to the Medical Corps and in other types of work in other branches where all their technical skill was lost. In my opinion this situation is a very serious one for not only the geologist, but also for other scientific groups as well. In other words, in my opinion, there has been a very serious wastage of scientific manpower under the past program of drafting and enlistment.

One of the most important weaknesses of the present insofar as governmental agencies are concerned is the policy some of them have been following in the war effort. Many of these governmental agencies and scientific organizations perform their functions by request, both military and civilian. These functions are only a part of what could be done to fully utilize their technical skills and talents, so that if they did have a free hand in making recommendations and suggestions and were cobperative in doing so, it would add considerable efficiency and valuable information and assistance in perfecting full utilization of their functions.

In line with your suggestion as to other members of the American Association of Petroleum Geologists being interested in this bill, I would like to refer you to K. C. Heald, Gulf Oil Corporation, Box 1166, Pittsburgh, Pa., and A. R. Denison, Amerada Petroleum Corporation, Drawer 2040, Tulsa, Okla., and A. I. Levorsen, 221 Woodward Boulevard, Tulsa, Okla.

I am sure all technical men in the United States appreciate your efforts in the mobilization of all our technical skills for the successful prosecution and winning of this war. If I can be of any service to you, please do not hesitate to call on me.

Sincerely yours,

F. L. AURIN, *President.*

84949—43—pt. 3——7

Digitized by Google

EXHIBIT No. 99

CALIFORNIA INSTITUTE OF TECHNOLOGY,
GATES AND CRELLIN LABORATORIES OF CHEMISTRY,
Pasadena, May 20, 1943.

Senator H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: It was gratifying to learn from the bill S. 702, which you have introduced in the Senate that our country's Representatives in Congress are awakening to the importance of the part that science and the scientists are playing during both war- and peace-times. I regret not having attended the meeting in Los Angeles at which you were present, but I was not informed of the conference until too late to go.

After reading your bill the following objections to the measure seems to me to deserve attention:

1. The Administrator and the six members of his board will have to be persons of considerable wisdom and understanding as well as highly competent scientists or technologists. This is a difficult combination to find. If the appointments become of a purely political nature then the board members will not have the confidence and respect of the scientists and technologists. Is it possible to include in the bill a statement to the effect that the President shall choose the board from the National Academy of Science and other well-recognized scientific and technological societies?

2. The Administrator and members of his board should also be made members of the various principal Army and Navy boards. Otherwise the office will have only a weakly advisory function in time of war. It seems to me essential that, since warfare is now so highly technical in character, sailors, soldiers, and scientists should be on an equal footing insofar as the decisions on the facilities and techniques of warfare are concerned.

It strikes me that some wise action should be taken soon if the country wishes to avoid a condition in which the most capable young scientists are rendered incapable of giving their most valuable services; their deferment deserves careful consideration. Moreover, if advanced study and training in science and technology is abandoned throughout the period of the war, and if the war is long, this country will be caught decidedly short.

I shall be pleased if my comments are of any assistance to you.

Very truly yours,

DON M. YOST,
Professor of Inorganic Chemistry; Lieutenant Commander (Retired), United States Naval Reserve; Member, Division 10 of National Defense Research Committee, Washington, D. C.

EXHIBIT No. 100

STANDARD OIL CO.,
New York, April 5, 1943.

Hon. HARLEY M. KILGORE,
Chairman, Subcommittee on Technological Mobilization,
United States Senate, Washington, D. C.

DEAR SENATOR: I observe that in the hearing before your Committee on Technological Mobilization, Mr. Justice Thurman Arnold returned to the subject of the effect of patent cartels on the synthetic rubber and gasoline situation. As reported to me he said:

"The great synthetic rubber and gasoline patent cartel was formed back in 1929. That cartel was holding back the production of rubber until it could get its new product completely under its control. It was hiding its techniques during the preliminary stages even from the Army and Navy. Had this bill been in effect before the war, the Army and Navy would have been as far advanced in the techniques of rubber as the Standard Oil. That knowledge would have been spread to the independent industries that were trying in vain to get licenses under Standard Oil domination. The operation of the rubber cartel was not discovered until 1942. Today millions of citizens lack transportation and the war effort is slowed down because this cartel had a corner on the techniques and the research in rubber."

The charges made by Mr. Justice Arnold are not new. The Standard Oil Co. (New Jersey), for which I speak, has demonstrated on more than one occasion

Digitized by Google

that he is in error so far as it is concerned. We are puzzled at his repetition of the statement: "Today millions of citizens lack transportation and the war effort is slowed down because this cartel had a corner on the techniques and the research in rubber."

The facts are, of course, that the lack of rubber which now slows down our efforts results not from the action of any company or cartel, but from the mistaken confidence of this Nation and Great Britain that adequate supplies of natural rubber would continue to be available to us even in wartime. Synthetic rubber substitutes could not be manufactured in this country before Pearl Harbor at costs low enough to compete with natural rubber, but synthetic rubber for all the United Nations will now be manufactured in this country by means of buna rubber processes brought here and developed by Standard Oil Co. (New Jersey).

I do not wish to burden your records with facts that have been stated at length on other ocasions, but I should like to ask you to read the testimony of Mr. William S. Farish before the Bone committee in August 1942, a copy of which is enclosed herewith. I should like to refer you, also, to Mr. Farish's and Mr. Frank A. Howard's testimony before the Truman committee, which you, as a member of the committee, will recall having heard, on March 31 and April 1 and 2, and which appears in the reports of that committee, part 2, pages 4359 to 4497; also to the record of the Senate Committee on Patents, part 9, in which appears the testimony of Mr. R. T. Haslam, pages 5038 to 5060; Mr. Howard, pages 5069 to 5074; Mr. E. V. Murphree, pages 5088 to 5102; Mr. H. W. Fisher, pages 5134 to 5155, and Mr. W. C. Asbury, pages 5155 to 5175.

In the interests of accuracy may I ask that you cause this letter to be entered in the record of your committee.

Yours very truly,

R. W. GALLAGHER, *President.*

EXHIBIT No. 101

MINNESOTA ASSOCIATION OF PROFESSIONAL ENGINEERS,
St. Paul, Minn., March 22, 1943.

Hon. H. M. KILGORE,
United States Senator, Washington, D. C.

DEAR SIR: This will acknowledge your letter of March 15 enclosing copy of Senate bill 702 which deals with the establishment of an Office of Scientific and Technical Mobilization.

First, let me thank you for your letter. A review of the bill does indicate that the National Society of Professional Engineers and our State association should certainly support any coordination at a national level of scientific and technological resources of the Nation.

We appreciate that the successful conduct of the present war is dependent upon the complete use of all resources of this Nation. However, we cannot help but feel that the actual machinery of war is dependent upon the maximum exploitation of scientific and engineering personnel resources.

I have today forwarded some recommendations to Mr. Samuel I. Sacks, who is chairman of our legislative committee for the National Society of Professional Engineers and who undoubtedly will be in touch with you so that you may get the benefit of any recommendations or observations that we have regarding certain details in the bill. You may know, however, that in general the bill has the support of the professional engineers in Minnesota and we trust that some of our suggested refinements will find their way in the amended bill.

Very truly yours,

S. L. STOLTE, *Secretary.*

EXHIBIT No. 102

BALTIMORE, MD., *March 18, 1943.*

Hon. H. M. KILGORE,
United States Senator, Washington, D. C.

MY DEAR SENATOR: Yours of March 16 enclosing a copy of your bill No. S. 702 together with a synopsis of same. First permit me to congratulate you on this timely and very much needed legislation. Too bad this was not in force and effect a year or so ago, for then we would be much further advanced in the progressing

Digitized by Google

the war and preparing for the peace. I shall make it a point to contact the Senators and Congressmen from my State, also others whom I know in the Congress, asking that they support this bill and do everything to get same into being at the earliest possible moment.

No doubt you would like a short statement from me showing why I favor your bill. Well I formerly was vice president and trustee of the United States Shipping Board Merchant Fleet Corporation, and later vice president of the United States Steamship Lines. At present I am practicing as transportation and marketing consultant. I recently completed a survey of the minerals and soils of Mexico, together with their outstanding sea life on both their coasts. Naturally, distribution in Mexico is their main problem, just as it is ours in this country. Hence I made a survey and pro forma of the rehabilitation of the Mexican railroads and set up a producers' mart. Modern inventions and equipment to these ends would be most helpful and constructive. But there is no place to go that an inventor with constructive gadgets, except to those who should be interested. I need not tell you what happens when that occurs. Your bill will correct all that, at the same time make possible the benefiting and serving all of our citizens.

For instance, steel will be hard pressed for disposing of their surplus capacity in the post-war period. Naturally one would say: "What's being done about it?" Take for instance the loss of business in the past by the railroads to the trucks which was attaining alarming proportions, and from all indications unless the railroads improve method for door-to-door service and interchange between the media of water, rail, and truck, plus eliminating the delays at gateways and terminals, both steel manufacture and railroad investments will be in the doldrums of what to do. I know of several inventions that would materially assist in this respect, but the inventors not having the necessary capital to bring same into being for demonstration, many outstanding things of progress lie dormant.

In my estimation, after watching and analyzing the railroad freight handling in operation as well as analyzing their proposed methods, I feel that an inexpensive and simiple method of transfer between our different mediums of transport would be a long step forward in correcting our defective distribution system. There is no earthly reason in this modern world of ours for the railroad car to lie dormant for 2 days to load or unload; there is no reason for the great loss of time at terminals and gateways, nor for ships to remain at their piers 10 to 16 days for unloading and loading. During this time the large investment in the ship lying idle while loading and unloading does not earn on this investment, and requires that many more ships to do a specific transport job. There are several gadgets on the market that I know of that would correct these conditions. However, the inventors not having the capital with which to construct a commercial unit for demonstration, the inventor and the country get nowhere. From my contact with transportation men it seems that tradition is the rock on which all efforts at improving service are wrecked.

I hope I do not bore you with this lengthy letter, but as you were good enough to send me a copy of your bill, S. 702, I felt it my duty to not only acknowledge the same but to put myself on record for favoring its speedy passage and my reasons therefor.

In conclusion let me say that I know what our defective distribution, which is marketing and transportation, means to our people, both in progressing the war and in the peace. And if you feel at any time that you would like to have me discuss these conditions with you, or any expert you may elect, please command me.

Very respectfully yours,

J. HARRY PHILBIN, D. S. C.

EXHIBIT No. 103

DIVISION OF MINES, MINING, AND GEOLOGY,
DEPARTMENT OF NATURAL RESOURCES,
Atlanta, Ga., March 18, 1943.

Hon. H. M. KILGORE,
United States Senate, Committee on Military Affairs,
Washington, D. C.

DEAR SENATOR KILGORE: Please accept my thanks for your thoughtfulness in forwarding me a copy of Senate bill No. 702, the object of which is to authorize

Digitized by Google

mobilization of the scientific and technical resources of the Nation and to establish an office for this purpose.

I have read this bill with a great deal of interest, and I am convinced that it is something for which there has existed a crying need for a long time. I sincerely hope that it will be possible to accomplish enactment of this proposed legislation into a law. If there is anywhere we may put our shoulder to the wheel please call on us.

Again thanking you for your courtesy, and with best wishes for your success with this bill, I am,

Sincerely yours,

GARLAND PEYTON, *Director.*

EXHIBIT No. 104

NORTH DAKOTA AGRICULTURAL COLLEGE,
DEPARTMENT OF BOTANY AND PLANT PATHOLOGY,
State College Station, Fargo, April 27, 1943.

Re Science mobilization bill.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SIR: I am very much pleased to have received your letter of April 23, transmitting a statement of the salient features of the science mobilization bill. At this time when it seems that the existence of all free republican-type nations is at stake, it is fitting that the Congress of the United States should give close attention to the enactment of an efficient mobilization bill which shall be quite clear as to its purpose. No citizen of this country can afford to do less or give less than his most efficient effort to increase our national production and facilities for carrying on an aggressively destructive war against those who would destroy the very bases of human rights or freedom.

I wish you and your colleagues every success in this attempt to strengthen or fortify our national methods of action.

Yours truly,

H. L. BOLLEY,
Botanist and Plant Pathologist.

EXHIBIT No. 105

THE CHEMICAL FOUNDATION, INC.,
New York City, March 25, 1943.

Hon. HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

MY DEAR SENATOR KILGORE: After reading a copy of S. 702, I would like to reiterate the sentiments we have previously expressed in support of the establishment of an Office of Scientific and Technical Mobilization. I believe the present bill to be an improvement over that introduced at the last session and that the need for such legislation is just as acute now as it was last year.

There still is no organization for the impartial evaluation and development of new ideas. As a matter of fact, it seems almost impossible to obtain an authoritative opinion as to what is and what is not important to our war effort. Certainly there is no coordination of research and the result of such a situation is obvious in the duplication of effort and the consequent waste of time, money, and manpower.

Our greatest need would appear to be an impartial and authoritative body, with adequate personnel and financing to evaluate, coordinate, and develop the efforts of those who are sincerely attempting to be of service in solving the Nation's problems. I believe that the legislation proposed by you would accomplish the desired result.

Very truly yours,

THE CHEMICAL FOUNDATION, INC.,
JOHN J. FOLEY, *General Manger.*

Digitized by Google

EXHIBIT No. 106

BERKELEY, CALIF., *May 15, 1943.*

Senator H. M. KILGORE,

United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: Ill health has delayed my answer to your courteous letter of April 23, enclosing a copy of your science mobilization bill (S. 702; H. R. 2100), but I have read the bill through and now want to express my hope that you succeed in securing its passage. It will, of course, meet with strong opposition, but some law of this kind has long been needed.

Whether minor corrections or changes should be made, I am not competent to judge, and as a self-respecting man of science I, therefore, offer none. But in its main objectives, it is, I think, what we need.

I was glad to see the bill printed in the current issue of Science.

Yours respectfully,

ROBERT G. AITKEN,
Director Emeritus, Lick Observatory.

EXHIBIT No, 107

AMERICAN SOCIETY OF CIVIL ENGINEERS,
WEST VIRGINIA SECTION,
June 15, 1943.

Hon. HARLEY M. KILGORE,

United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: The members of the West Virginia section, American Society of Civil Engineers, with whom I have talked recently, have shown a considerable interest in Senate bill No. 702, which you recently introduced in the United States Senate, covering the creation of Office of Scientific and Technical Mobilization.

In order that the members of the society in West Virginia may be fully informed on this important piece of legislation, I would appreciate it if I could receive a number of copies of the bill. We have about 120 members in West Virginia and could easily use 50 copies or more, if they are available without cost.

May I express my personal appreciation for the recognition which you have given to the engineering profession by the introduction of this bill.

With best wishes and kindest personal regards.

Very truly yours,

GEORGE W. MCALPIN,
President.

EXHIBIT No. 108

EVAPORATED MILK ASSOCIATION,
Chicago, May 21, 1943.

Hon. HARLEY M. KILGORE,
United States Senate, Washington, D. C.

SIR: Thank you for your letter of May 13 and for the copy, volume 3, of hearings on S. 2721. It has been interesting and instructive to us to examine the testimony and exhibits therein.

We note from your letter that the committee on technological mobilization referred back to Mr. Van Leer the comments in our letter to you of January 27, in which we took exception to some of Mr. Van Leer's testimony; chiefly to his statements concerning the relative shipping space occupied by evaporated milk and dried skim milk. We note also in your letter that Mr. Van Leer cites as his authority a statement made July 9, 1942, by Mr. Roy F. Hendrickson. This statement implies that there is a cargo space ratio of 4 to 1 for evaporated milk as compared to dried skim milk in transporting these commodities overseas. This statement was based solely upon the comparative weights of the two products, exclusive of packaging, in terms of milk solids.

It was because of this and similar statements from the Department of Agriculture that we presented to that Department, shortly following these statements,

Digitized by Google

calculations of the actual amounts of space occupied by these two products as compared to comparative weights. These figures were given to you in our letter of January 27, and show that equivalent volumes of the two products are therefore: evaporated milk to powdered skim milk, 1.9 to 1, exclusive of packaging.

Since dried skim milk contains practically none of the fat of milk, which contributes approximately half of its total food energy value, the comparisons between these two foods as to shipping space is further leveled off when they are compared on the basis of food value. This information, as given in our letter of January 27, is that equivalent shipping volumes of the two products, exclusive of packaging, in terms of gross food value, are in the ratio of evaporated milk to powdered skim milk, 1.3 to 1.

Therefore, in terms of food value per unit of shipping space, evaporated milk can be sent to our allies only slightly less economically than powdered skim milk.

A point we should like to emphasize is that as compared to this relatively small difference in shipping space involved, evaporated milk offers certain advantages in feeding problems overseas, among which are ease of utilization; a better balance of food values, since the whole milk is involved; familiarity with and general acceptance of the evaporated product; its packaging in small, stable units which enable easy distribution; and last, but by no means least, the important nutritional values of the water content of evaporated milk which has already been found to be beneficial in the feeding of soldiers and the population of north Africa—and, more dramatically, in sustaining life and diminishing muscle wasting in individuals cast adrift upon life rafts.

In your letter of May 13 is given Mr. Van Leer's remarks that "some shipping space is lost in transporting round cans, which would be utilized in shipping square packages." It is our information that the dried skim milk being purchased and sent abroad in the lend-lease program is packaged chiefly in barrels containing approximately 200 pounds of this commodity. Therefore, Mr. Van Leer's comparison of round cans to square packages is not applicable.

On the point of compression after dehydration: The latest information which we have from our industry is that compression of dried skim milk has not yet been accomplished on a practical scale. This is due to properties of elasticity, as well as cohesion, in dried skim milk and is in contrast to the comparatively successful use of compression of certain dehydrated vegetables. It is to be hoped that this can be accomplished with dried skim milk in the near future.

May we take this opportunity to express again that our industry is basically interested in both types of milk, evaporated and powdered skim. Our manufacturers are engaged in the production of both items; both are among the useful forms of milk and have vital roles in the war effort. We are submitting the above presentation for the sole purpose of clarifying for your committee certain technological aspects which we feel have not been accurately represented.

Sincerely yours,

FRANK E. RICE.

EXHIBIT No. 109

NATIONAL DAIRY PRODUCTS CORPORATION,
New York, N. Y., March 30, 1943.

Senator HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

DEAR SIR: Referring to my letter of January 5, 1943, and your reply of January 13, we suggest that the enclosed statement be inserted in the next volume of hearings on Senate bill 2721.

Sincerely yours,

ELMER J. MATHER,
Vice President.

COMMENTS ON STATEMENTS OF DR. WILLIAM DEKLEINE AT HEARING ON S. 2721, VOLUME 3, PAGES 843 TO 850

SUMMARY

Dr. DeKleine's testimony leaves the impression that billions of pounds of skim milk are annually going to waste on farms in this country and that no one has done or is doing much of anything about it. It is that general impression that we have tried to correct. We have endeavored to show that—

Digitized by Google

(1) Skim milk fed to livestock does not go to waste.

(2) The dairy industry, principally through the activities of one of its trade associations, the American Dry Milk Institute, has done much to develop a market for dried skim milk for human consumption.

(3) The increase in the use of dried skim milk for human consumption must be a gradual one, depending both on the development of supplies and the further development of a market for the product.

(4) In the meantime, as has been the case in the past, the manufacture of casein and possibly the development of other industrial uses for skim milk will serve as a balance wheel for the industry.

Amount of skim milk remaining on farms

The statement on pages 844 and 845 with regard to the amount of skim milk remaining on farms is approximately correct. The following statement in a letter from Mr. John L. Wilson, of the Bureau of Agricultural Economics, United States Department of Agriculture, is considered authoritative and gives us an up-to-date picture:

Skim milk remaining on farms, 1941

From milk skimmed on farms for sale of cream to plants and dealers: 34.2 billion pounds of milk skimmed, at 87 percent skim milk (assumes cream test about 30 percent)	[1] 29.8
From milk skimmed by producer-distributors for sale of retail cream: 5.9 billion pounds retailed as milk or cream, 0.9 billion skimmed for cream (assumed 15 percent of total), at 87 percent skim milk	.8
From milk used for farm-churned butter: 8 billion pounds milk used, at 80 percent skim milk (assumes cream churned tests 20 percent fat)	6.4
From cream consumed by farm families: 12 billion pounds consumed as milk cream, 2.4 billion pounds skimmed for cream (assumed 20 percent of total), at 85 percent skim milk	2.0
Total skim milk on farms	39.0

If the skim milk used for consumption by farm families (belived to be in the neighborhood of 5 billion pounds) is deducted, the remainder of about 34 billion pounds would be available for livestock feed .

[1] This figure may be approximately checked from manufactured products as follows:

	Billion pounds
Whole milk equivalent:	
Creamery butter	39.1
⅞ ice cream, excluding duplication	[1] 1.8
	39.9
Deduction for whole milk skimmed in plants for butter and skim products skimmed on farm	[2] 5.9
	34.0
Skim milk, at 87 percent of milk skimmed	29.6

[1] 5.7 billion gross—1.2 billion from butter and condensed milk products=4.5 billion net. Assumes ⅞ delivered by farmers as whole milk.

[2] Computed from skim milk equivalent of factory skim products in excess of that available as byproducts of fluid cream industry.

Skim milk equivalent factory products		9.7
Deducted from skim available from fluid cream sales by dealers:		
Milk and cream consumption in cities and villages	34.9	
Less retail sales by farmers and production by town cows	8.3	
Milk handled by dealer-distributors	26.6	
Assumed 20 percent sold as cream at 87 percent skim milk	5.3	
		4.6
Skim milk from plant skimming for factory products		5.1
Whole milk equivalent, at 1.15		5.9

While sufficient 1942 information is not available to make similar calculations, it would appear that the amount of skim milk left on farms would be less than in 1941 by perhaps 1 or 2 billion pounds. Milk production on farms was nearly 4,000,000 pounds higher but increased deliveries of whole milk by farmers appear to have more than accounted for the increase of production, leaving the amount skimmed for cream less than in 1941.

Digitized by Google

Value of skim milk for stock feeding

It is incorrect to speak of skim milk left on the farms as "wasted." When it is fed to livestock it is indirectly being used for human consumption. Whether this skim milk should be so used or should be dried and used for direct human consumption is a question of economics and market possibilities for dried skim milk. Whether the skim milk can be dried is largely a problem of the size and geographical location of the farms where the skim milk is produced.

Nutrition and livestock specialists agree that except for feeding to young animals, skim milk would command a higher net return today if it could be manufactured into dried skim milk for direct human consumption.

The human consumption market for dried skim milk

The demand for skim-milk powder in time of war is far different from what it was prior to the war. It so happens that this is a product for which methods of manufacture and uses have had to be developed and a demand created. Contrary to the statement at the bottom of page 847 of the record of the hearings, the American Dry Milk Institute, of which, incidentally, National Dairy Products Corporation is not the largest member, has done an outstanding job in creating a market for dried skim milk. According to the institute's record, production of this product has increased from 16,463,000 pounds in 1916 to 399,294,871 pounds in 1942. Of the 1942 production, 361,486,271 pounds was for human consumption. The institute has never promised its fluid-milk members not to promote dry skim milk. In fact, its has tried to encourage and assist fluid-milk companies in attemps to market dried skim milk in retail packages. The Ewing-Von Allman Dairy Co., a fluid milk and ice cream subsidiary of National Dairy Products Corporation, located in Louisville, Ky., has tried without success to market dried skim milk direct to the housewife. The bakers, candy manufacturers, and ice-cream makers are as yet the largest commercial users of dried skim milk.

During much of the period of 1933 to 1941 more skim-milk powder was produced than could be profitably marketed and that was the reason the industry operated under the marketing agreement of the Agricultural Adjustment Administration, i. e., in an endeavor to bring order out of chaos in marketing the product.

Skim-milk powder manufacturing possibilities

Assuming that a skim milk powder market were normally available for all of the skim milk now fed to livestock, could we expect all of this skim milk to be dried immediately to supply this market? The answer is "No." The reason is simply that approximately 90 percent of the farms having milking cows in this country have less than 10 cows per farm and produce over half the milk that is produced. Seventy-two percent of the farms have less than 5 cows per farm and produce over one-fourth of the milk produced. Small herds are the rule in many areas in the Middle West where cows are kept as a part of a diversified system of farming, cream being shipped to the centralized creamery. These farmers are not prone to change their systems to one of whole-milk delivery and there isn't enough milk in a sufficiently small area to operate a creamery and milk-drying plant. Generally speaking, the eastern part of Kansas, Nebraska, Iowa, southern Minnesota, Wisconsin, and Michigan are the most promising locations for development of milk deliveries from the farm to factories and it is in these areas that through the system of priorities for building materials and equipment the production of dry skim milk is presently being extended.

The men most familiar with plant-procurement problems throughout the country are generally quite united that 25 percent of this milk at farms could be made into dry milk quite quickly with a favorable policy and price combination. Then working from there up, 50 percent of the farm production left at the farms would be more a matter of growth and development. Again, all depends upon policy and price for the finished products.

Industrial uses of skim milk

From what has been stated, it can be seen that prior to the war there was really a surplus of skim milk available for manufacturing purposes for which there was no profitable market as skim milk powder. Some of this skim milk was of unsatisfactory quality for human consumption skim-milk powder. Because of these facts, this skim milk found its way into other manufactured

Digitized by Google

products, notably casein. The following table showing the uses of skim milk for manufactured products in 1941 is taken from Production by States of All Manufactured Dairy Products, 1941, dated January 1943. This is a publication of the United States Department of Agriculture, Bureau of Agricultural Economics.

	Pounds
Full skim American cheese	7,000,000
Cottage, pot, and baker's cheese	1,172,000,000
Condensed and evaporated skim milk	1,519,000,000
Concentrated skim milk for animal feed	58,000,000
Dried or powdered skim milk	5,242,000,000
Dried casein	1,690,000,000
Total	9,688,000,000

It will be noted that approximately one-sixth of the skim milk used for manufacturing purposes was manufactured into dried casein. Casein manufacture has always had to stand on its own feet competitively and has provided a source of income to farmers that otherwise they would not have had. While National Dairy has never been in the button business, as the testimony indicates, some of its subsidiaries have manufactured dried casein for sale to various industries, notably paper manufacturers and in 1941 Aralac, Inc., a subsidiary of National Dairy Products Corporation, began the manufacture of Aralac, a substitute wool fiber which bids fair to find a large place in the manufacture of textile items. The casein used in this product does come from "skim milk residue" as quoted by Dr. DeKleine and when, as and if a more profitable market for the farmers' skim milk is developed, the skim milk for casein now being used in Aralac will go to that market. That is purely a question of economics.

EXHIBIT No. 110

KING COLLEGE,
Bristol, Tenn., April 30, 1943.

Senator HARLEY M. KILGORE,
United States Senate, Washington, D. C.

MY DEAR SENATOR KILGORE: I have received the copy of your science mobilization bill, S. 702.

I wish to say that I favor the passage of this legislation believing that it is in the national interest in this time of emergency and that its indirect effect will be to promote science and education.

Sincerely yours,

R. T. L. LISTON, *President.*

EXHIBIT No. 111

CHARLESTON, W. VA., *June 13, 1943.*

Hon. H. M. KILGORE,
United States Senator, Washington, D. C.

DEAR SIR: I received a copy of your bill, S. No. 702, for which I wish to thank you.

I believe that a department in the Government for the purpose of promoting scientific development would be beneficial to the United States in time of peace as well as war, and hope that the other Members of the Senate will give your measure favorable consideration.

Yours respectfully,

ROBERT MATTHEWS.

EXHIBIT No. 112

MICHIGAN COLLEGE OF MINING AND TECHNOLOGY,
Houghton, Mich., May 24, 1943.

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: Yours of April 17 came to my attention recently, and I discussed the science mobilization bill (S. 702 and H. R. 2100) with some of

Digitized by Google

our department heads, and we are of the general opinion that the bill should be supported, as it appears to be a worthwhile effort.

This is especially true and has a special value in the field of development of fundamental research, and I hope your bill may meet with favor in this Congress.

Sincerely,

GROVER C. DILLMAN,
President.

EXHIBIT No. 113

THE UNIVERSITY OF MIAMI,
Coral Gables, Fla., June 7, 1943.

Hon. HARLEY M. KILGORE,
United States Senate Office Building,
Washington, D. C.

DEAR SIR: Your letter of April 17, 1943, enclosing copy of the science mobilization bill (S. 702 and H. R. 2100), together with the statement summarizing its more important provisions, has reached my desk for reply. President Ashe, to whom your letter was addressed, is absent from the university on Government service. However, since the receipt of your letter here, the material which you forwarded to President Ashe has been turned over to the eight members of our science research council for their individual perusal, and it has been carefully read and discussed by other members of our staff in the scientific fields.

May we take this opportunity to commend your initiative in introducing legislation directed toward the improvement of our national scientific program.

Very truly yours,

W. J. HESTER, *Secretary.*

EXHIBIT No. 114

UNIVERSITY OF PORTLAND,
Portland, Oreg., April 28, 1943.

Hon. H. M. KILGORE,
United States Senator, Washington, D. C.

DEAR SENATOR KILGORE: Your letter of April 17, together with Senate bill 702, is received.

In my judgment this bill should be passed. It will contribute notably, I think, to the general and particularly to the educational welfare of our country. Furthermore, I think it will provide for a need which will be very acute in the postwar world. May I congratulate you on having initiated such a useful piece of legislation.

Respectfully yours,

Rev. CHARLES C. MILTNER, C. S. C., *President.*

EXHIBIT No. 115

WELDING RESEARCH COMMITTEE OF THE ENGINEERING FOUNDATION

SPONSORED BY AMERICAN WELDING SOCIETY, AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

NEW YORK, *April 30, 1943.*

Hon. H. M. KILGORE,
United States Senate, Washington, D. C.

DEAR SIR: We were very much interested in your bill S. 702 presented before the Seventy-eighth Congress. We assume, of course, that the proposed bill has in mind cooperation with the Office of Scientific Research and Development, the National Defense Research Committee, the Office of Production Research and Development of the War Production Board.

Insofar as civilians are concerned, no specific mention is made of the engineering societies of the United States. This committee represents the welding research committee of the American Welding Society and the other national engineering societies.

Digitized by Google

Welding, as you know, is one of the principal tools of production in ships, tanks, planes, guns, etc. We have gathered together the principal scientific talent of this country interested in welding research. We cooperate with the other Government departments mentioned above, but at times this cooperation is more like pulling teeth, and in many respects is one-sided. When such departments become interested in an investigation that we have started, they take over.

We are not complaining at all, and will cooperate with any new organization that is created. Personally, I am intensely interested in cooperative research, having spent the last 25 years as executive secretary of the Engineering Division of the National Research Council, and in recent years as executive secretary of the above committee.

Very sincerely yours,

W. SPRAGUE.

EXHIBIT No. 116

WESTERN WASHINGTON COLLEGE OF EDUCATION,
Bellingham, Wash., May 10, 1943.

Senator H. M. KILGORE,
Committee on Military Affairs, United States Senate, Washington, D. C.

MY DEAR SENATOR KILGORE: I should like to express our approval of the science mobilization bill (S. 702 and H. R. 2100), which was recently introduced in both Houses of the Congress. Certainly the Nation should use the facilities of its higher educational institutions to the fullest. The laboratories of our colleges and universities will play an important part, as they have in the past, in our future development.

I thank you for sending us a copy of the bill.

Very sincerely yours,

W. W. HAGGARD, *President.*

EXHIBIT No. 117

WESTMINSTER COLLEGE.
New Wilmington, Pa., June 17, 1943.

Senator HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

DEAR SENATOR KILGORE: I have read your bill, S. 702, over quite carefully. I believe that it is a step in the right direction and I favor its passage. With labor and industry mobilized to give their greatest effort toward winning the war, I believe that science should also be mobilized and that intelligent, unbiased, and open-minded scientists will favor the passage of Senate bill 702.

Sincerely,

H. S. OSGOOD, *Chairman, Department of Chemistry.*

EXHIBIT No. 118

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
DEPARTMENT OF ELECTRICAL ENGINEERING,
Cambridge, Mass., June 24, 1943.

Senator HARLEY M. KILGORE,
United States Senate, Washington, D. C.

DEAR SENATOR KILGORE: Some time ago the local branch of the American Association of Scientific Workers appointed a committee to study your technical war mobilization bill. The report was entirely favorable.

We have not heard what influence the creation of Office of War Mobilization has had upon the situation, but if the bill is still being pushed we should appreciate having 50 copies for distribution to our local membership.

Yours very truly,

L. B. ARGUIMBAU,
Secretary of Boston-Cambridge Branch American Association of Scientific Workers.

Digitized by Google

EXHIBIT No. 119

JOHNSTOWN COAL & COKE CO.,
Charleston, W. Va., June 10, 1943.

Hon. HARLEY M. KILGORE,
Senate Office Building, Washington, D. C.

DEAR SENATOR: Read with interest the Senate bill No. 702 and heartily agree with its purposes, for if anything has been badly butchered in the war effort it has been the misplacing of men into scientific and technical work, so many of whom are so poorly fitted.

For example, I only learned yesterday of a young man, in his late thirties, who was called via the draft, and during practically all of his business life was a grade-school teacher, and for some reason he never knew was placed in an engineering section and, as he said, he had never had any technical training and never knew what it was all about. Apparently, the Army became so disgusted with him they discharged him from the service.

Hope this bill will pass the Senate at a very early date so that the war effort may get the benefit of it.

Sincerely yours,

W. G. CRICHTON.

EXHIBIT No. 120

UNIVERSITY OF ARIZONA,
LABORATORY OF TREE-RING RESEARCH,
Tucson, Ariz., May 1, 1943.

Senator H. M. KILGORE,
Washington, D. C.

DEAR SENATOR KILGORE: I have your communication of April 23 and a copy of the bill on science mobilization. It seems to me a very desirable procedure. In the war situation, I have almost no time to look at points of special interest. I will find time to look at this further if possible.

By chance I heard recently a description of the institute of anthropology and of the bureau of Indian affairs in Mexico. It seemed to me there were some superb ideas there as to the connection between scientific research and government.

I have often considered the possible help that our work in tree rings and climate might get from governmental sources. Right now I am sure we could make a contribution along climatic lines if we had a certain type of material collected by, and only by, a skilled investigator such as my associate Mr. Schulman, in the mountains from the Mexican border to the Straits of Magellan. (I am not much expecting anything from tropical trees. The important regions are just outside the Tropics.)

Sincerely yours,

A. E. DOUGLASS.

EXHIBIT No. 121

SYNTHETIC RUBBER REPORT

Proposals of the International Federation of Architects, Engineers, Chemists, and Technicians, chapter 25, for (1) refinery conversion for quick butadiene; (2) immediate training of technical manpower for new rubber industry

BUTADIENE PRODUCTION

The synthetic rubber program for 1943 as established in the Baruch committee report is falling behind schedule. Rubber Director Jeffers and other officials concerned with the program publicly admit this fact.

I. New plants behind construction schedule.

On December 28, Director Jeffers stated that we were "one month behind the progress envisioned in the Baruch report." Since 4 months have elapsed since the Baruch report was issued, this delay of 30 days already represents a 25 percent delay in the program. It was stated in the Baruch report that a delay of 120 days in the succeeding year's program, or a delay of 33⅓ percent, would seriously jeopardize our military victory in the war against the Axis. The pres-

Digitized by Google

ent 25 percent delay is dangerously close to the point which the Baruch report warned would imperil our military victory. The situation is grave and no effort should be made to mask the seriousness of our position.

It is therefore necessary that we do not wait for the opening of the new butadiene plants, but that steps be taken to convert existing plants and equipment in order that we proceed without delay to the "quickie" butadiene process. This means to now increase by a substantial amount the butadiene production scheduled by refinery conversion processes. The delay in the entire program is due to delay in the new plants to manufacture butadiene from petroleum, the so-called permanent plants. These catalytic cracking and dehydrogenation plants require large tonnages of critical materials, and priority difficulties are given as the reason for the delay in their construction. But the priority system cannot solve the problem of raw material shortages in the absence of real production scheduling; and, therefore, the mere assignment of priorities will not build these plants in time.

There is evidence before the Gillette committee that the construction of more than one of the new butadiene plants is behind schedule. For example, Assistant Deputy Petroleum Coordinator Bruce K. Brown was unable to inform the Gillette committee whether Standard Oil's 6,200-ton-a-year butadiene plant at Baton Rouge was in operation, although this plant was due to go into production last September. (Brown is a Standard Oil of Indiana executive, who, while being paid $9,000 per year by the Government, is receiving the balance of his salary from Standard Oil.) The largest butadiene plant under construction is that of Shell Chemical in southern California with an annual capacity of 85,000 tons, and it is doubtful if this plant will start operations as scheduled in March 1943.

New technical difficulties in the Standard-Shell process of butadiene manufacture for the southern California plant have arisen within the past week, and no satisfactory solution is in sight at the present time. This condition is symptomatic of all butadiene from petroleum plants, and mere completion of construction is no guarantee of successful operation.

It should be pointed out that no new chemical process works out as scheduled, particularly a process as untested and large in scope as the Standard butadiene from petroleum process. The experience of the small Shell butadiene plant in Texas indicated a delay of some 10 months before capacity production was attained.

. . . .

It is apparent, then, that much greater reliance must be placed on the production of butadiene by the refinery conversion processes.

II. Refinery conversion for "quick butadiene" now.

The refinery conversion program as set forth in the recommendations of the Baruch report called for 120,000 tons annual capacity of "quickie" butadiene production. This quota was set by the Baruch committee in spite of the fact that its own technical experts were of the conviction that 200,000 to 400,000 tons could be produced by conversion. In view of the present critical situation, the quota set must be scaled upward by a considerable amount. The refinery conversion processes utilize existing refinery equipment and salvage equipment, and require only a small expenditure of new, critical materials. The butadiene production to be achieved by a utilization of these processes should be regarded not only as production output required for a given time schedule, but also as a method for insuring the production of the new plants.

Furthermore, the annual capacities in terms of tonnage and completion dates are liable to be misleading. Actually, the average plant will produce nothing the first month after completion, about 20 percent of capacity the second month, 40 percent the next month, 60 percent the next month, and 100 percent the fifth month. Thus, a period of at least 5 months elapses after the completion date before capacity production is reached.

These facts should make plain the critical need of an expanded refinery conversion program for the production of butadiene. If the program is expanded now without further delay, considerable butadiene can have been produced by September 1, 1943, the expected low point of rubber supply.

Refinery conversion processes include the Houdry process of utilizing catalytic cracking equipment for the production of butadiene in a two-stage dehydrogenation process using normal butane as feed stock, and thermal cracking processes using naphthas or low octane gasoline fractions as food stock. In the latter process yields of butadiene are low but existing thermal cracking equipment can be readily converted. The purification of the butadiene can be accomplished by the

Digitized by Google

Shell "vapor phase" extraction process or the Standard selective chemical reaction process. If the Shell "vapor phase" purification is adopted, large quantities of critical materials can be saved and the basic equipment necessary is found in all refineries. Both types of conversion have the additional advantage that butylenes also badly needed for the aviation gasoline program are not required for feed stock, thus avoiding potential conflict in the requirements for high-octane aviation fuel.

Why, then, has the refinery conversion program been delayed? On January 6, 1943, the assistant deputy petroleum administrator told the Gillette Senate Investigating Committee that delay to obtaining official sanction for conversion of refineries to produce butadiene has impeded the rubber program. He stated that if the plant conversions had been started at the time the refiners and natural gasoline manufacturers first proposed them, the plant would have been in operation "many months prior to the best completion date which can be predicted for a wholly new plant." From whence stems the resistance to the conversion program?

III. Opposition to conversion threatens success of war.

We submit that the opposition to this program of conversion of existing facilities stems from the same monopoly of petroleum interests headed by Standard and Shell as was originally responsible in large part for the sabotage of the superior processes using ethyl alcohol as feed stock, as well as the sabotage of the Russian offer of technical assistance. These are the same interests that have sonspired with I. G. Farbenindustrie to prevent the production of synthetic rubber in this country. In 1941 Goodrich Rubber developed their own process for synthetic rubber and Standard Oil filed suit for infringement of one of the I. G. Farben patents. It would be well to recall that this suit was pending at the time when the Axis struck at Pearl Harbor.

Any program which threatens the post war dominance and monopoly of the large petroleum corporations and corporation combines can expect to meet ruthless and completely selfish opposition. Not only do the new Government-financed plants enormously increase the total assets of the petroleum corporations, but the entire existing refining capacity is retained intact for immediate use after the war. The monopolistic oil interests oppose the inclusion of independent, small refiners in the synthetic-rubber program.

Oil Workers International Union Local 449 of Texas City points out that "it is precisely these people who now withhold the licensing of basic patents for production by independents." This corporate selfishness and total disregard for the demands of military necessity is not only completely reprehensible, but if not checked will seriously imperil the success of the war. We submit, therefore, that the refinery conversion program should be accelerated with particular emphasis on including small, independent refineries.

IV. Program for California.

Specifically, for the northern California area, we propose the following:

1. One out of the four large petroleum refineries in this area (Shell, Standard, Associated, and Union) should convert all equipment capable of conversion to the manufacture of butadiene for synthetic rubber. The additional feed stock required could be furnished by the other three refineries involved.

2. If this conversion should occasion a loss of aviation gasoline output in this refinery, it is proposed that corrective steps be taken to proportionately increase the output of aviation gasoline constituents in the other three refineries concerned.

3. A study should be made to determine which refinery is best adapted to conversion and which process is most advantageous for maximum production in the shortest possible time.

It has been recently reported that two conversion projects using the Houdry process had been approved for California. However, these projects are to replace "permanent" projects which have been dropped, and therefore do not increase the total production of butadiene. The Baruch report pointed out that refinery conversion projects were intended to add to and not replace the so-called permanent plants. It should be reiterated again that refinery conversion projects should be instituted in California to provide extra butadiene capacity, both to meet the production schedule and as insurance for the production of the entirely new plants.

This program of refinery conversion for the northern California area may be extended to each oil-producing area and thereby accelerate the refinery conversion program to provide sufficient butadiene for the 1943 requirements of syntheic rubber.

Digitized by Google

V. Aviation gasoline production need not suffer.

It has been stated that where the aviation gasoline and synthetic rubber programs come into conflict that the aviation gas program must take precedence. Steps whereby such conflict can be avoided have already been indicated. However, can it be that this argument on the greater importance of aviation fuel results from that school of military strategists which states that the war can be won by aviation alone? It should be clear that the invasion of Europe promised by President Roosevelt in his message to Congress relies upon adequate and guaranteed supplies of synthetic rubber within the next few months for modern, mechanized equipment. We cannot base military offensives on rubber we do not have.

Unless the success of our synthetic rubber program is guaranteed, the appeaser defeatist forces will be sure to seize upon this situation as reason enough to withhold the military offensive against the Axis Powers and an early invasion of continental Europe.

DEARTH OF TECHNICAL MANPOWER FOR THE SYNTHETIC RUBBER PROGRAM

As serious as is the present problem of a butadiene production schedule, even more potentially serious is the problem of recruiting and training sufficient technical and semitechnical manpower to insure the successful operation of these plants. A startling admission by Deputy Rubber Administrator Colonel Dewey before the Gillette Senate committee December 16, 1942, was that the latest bottleneck in the rubber program was the problem of the technical manpower required to operate the complicated butadiene, styrene, and copolymerization plants.

VI. Training technical manpower now vital.

Here we are expecting to operate a new chemical industry in which the Government has invested upward of $650,000,000 to produce 800,000 tons of synthetic rubber per year. Altogether there is a mere handful of trained men who have had even a limited experience in manufacturing butadiene or similar products. We can estimate a minimum of 10,000 chemists, engineers, technicians, and plant operators will be required, and yet we see no visible steps in training men and women for these posts. The efforts of the Federation of Architects, Engineers, Chemists, and Technicians in California through labor-management committees to induce interested leading petroleum companies to institute a special training program have been balked thus far. Yet these companies have on their present staffs trained technicians, operators, and engineers who with a minimum of training could be equipped to step quickly into butadiene plant positions of responsibility.

VII. Business-as-usual policy must be rejected.

What then, is being done to solve this vital and pressing problem? Each company is applying its old peacetime thinking to this problem, with the result that no adequate or coordinated program of training exists. For the most part these companies have demonstrated that they are not even aware of the extreme urgency of the technical manpower shortage.

As an example of the present approach to this problem, the Shell Chemical Co., which is to operate the largest butadiene plant in the entire rubber program, has selected one of its chemists and sent this chemist out to familiarize himself with plant practice. Otherwise this company is requesting applications from chemists with no rubber experience.

Another example is one of the largest research laboratories in the country which is well acquainted with the butadiene problem. This company employs a staff of from 600 to 700 scientists and technicians, and yet less than 10 percent of this staff is concentrated on butadiene problems. This company with its business-as-usual attitude is not only not adding to the staff number working on rubber, but is actually taking highly trained rubber chemists off rubber work for nonessential war work on paints. Other research units are working on the far-fetched problem of finding uses for butadiene for the post-war period before we have mastered the manufacture of butadiene for pressing military neds.

VIII. Seek rubber industry council with labor-management-government representation.

A positive, coordinated plan on both a regional and national scale must be accomplished through joint labor-management-government cooperation. All the

Digitized by Google

trade unions involved in the rubber program, Federation of Architects, Engineers, Chemists, and Technicians, Oil Workers International Union, United Rubber Workers, and the companies, and representatives of the War Manpower Commission should jointly work out this training program. These agencies should endeavor to secure as many qualified technicians and operators as can be spared from the petroleum and allied chemical plants and laboratories. It is obvious that this problem cannot be solved by any one company alone. If in the Standard Oil and Shell laboratories of California there are today from 1,500 to 2,000 highly trained technicians, surely 500 of these could be commandeered to prepare themselves to man the new butadiene and rubber plants.

The Federation of Architects, Engineers, Chemists, and Technicians recently approached the Office of the Rubber Director with proposals to insure training of technical personnel. The answer received from the Office of the Rubber Director stated, "If, therefore, you will furnish me with a list of men trained in technical fields related to that of synthetic rubber with a brief notation of their training, experience, and qualifications, I shall be glad to bring it to the attention of those concerned with manpower problems in the several plants and laboratories."

This attempt at piecemeal solution of a problem as large in scope as this problem of training sufficient technical manpower for an entirely new industry will not succeed. This problem is much easier solved by a planned utilization of the tremendous potential capacities of the existing petroleum company research laboratories.

Our plan is to receruit the necessary number of men and women and to begin training them immediately. In the past it has been the policy of large companies to hoard technical manpower and to prevent their release to plants and laboratories of other companies in the same or allied fields. Further, the technical manpower from nonessential industry, for example from the cosmetic and pseudopharmaceutical industry, must be released for work in the synthetic rubber program. A large number of organic chemists would thus be made available for essential research and development work in synthetic rubber.

IX. Program for California.

Specifically for the northern California area we propose the following:

1. A special intensive course in rubber technology should be given in conjunction with the University of California's wartime training program. Outstanding experts from the Rubber Director's Office should be assigned to conduct this course. All chemists and engineers in the area with any experience in research or development in synthetic rubber, as, for example, the butadiene and rubber research personnel at the Shell and Standard laboratories and plants, should attend this course.

2. This personnel should be expanded by the transfer to rubber problems from less important work of sufficient chemists and engineers to adequately staff all synthetic rubber plants in the California area.

3. This special course in rubber technology should be followed by a period of in-service plant training to be given in the first butadiene, styrene, and polymerization plants to be completed in California. This should include in-service training in the refinery plants converted to butadiene manufacture.

4. This technical personnel would then be qualified to take charge of further on-the-job training in plants and laboratories and would function as "technical commandos" to solve operating problems and "bugs" in the synthetic rubber plants whenever and wherever they may arise.

5. Selective service should reconsider the cancelation of occupational deferments for trained technicians and the utilization of these technicians for the rubber program.

SUMMARY

In the above report we have discussed two phases of the synthetic rubber program: The production of butadiene by refinery conversion processes and the training of technical manpower for this new industry. These are two of the most pressing problems facing us today. To insure the successful operation of the plan outlined above, a joint labor-management-Government committee for synthetic rubber should be instituted. This committee should have representation from the Federation of Architects, Engineers, Chemists, and Technicians, the Oil Workers International Union, and the United Rubber Workers of America. This would be in line with the Congress of Industrial Organizations-Murray plan, and the committee set-up would function as a synthetic rubber industry council, with American labor, chemists, technicians, oil and rubber workers given a responsible voice in carrying out the program.

Digitized by Google

OUTLINE OF SPECIAL COURSE IN SYNTHETIC RUBBER TECHNOLOGY

A. Technical manpower needed:

The following categories of technical manpower and womanpower will be urgently needed for the synthetic rubber program:

1. Rubber chemists and engineers.
   This classification would consist of graduate chemists and engineers, and preferably chemists and engineers with experience in petroleum, rubber, or allied fields.
2. Plant operators.
   These men and women should be mechanically inclined, with some background in chemistry or physics.
3. Laboratory technicians.
   These men and women will run the laboratory control operations, will test the intermediate and finished products according to standard and special tests.

B. Outline of courses needed:

1. Courses for rubber chemists and engineers.
   - A. Butadiene production and recovery:
     - Butadiene production:
       1. Introductory review of problem and various processes.
       2. Thermodynamics:
          - Thermodynamic relationships between hydrocarbons.
          - Heats of reaction.
          - Heat capacities of gases and solids.
          - Equilibria in dehydrogenation reactions.
       3. Thermal cracking of hydrocarbons:
          - For gasoline.
          - For aromatics.
          - For butadiene and other olefins.
          - Technical problems in high-temperature cracking processes.
          - Thermal secondary reactions of butadiene.
       4. Catalytic dehydrogenation of butylenese and butane:
          - Theory of contact catalysis.
          - Practical aspects of catalysts—poisoning carbonization, aging, regeneration.
          - Means of effecting catalytic reactions.
          - Reactor design.
          - Sources of butylenes and butane.
          - Preparation of feeds for catalytic dehydrogenation.
          - Catalysts and process for butane dehydrogenation.
          - Catalysts and process for butylenes dehydrogenation.
       5. Analytical control:
          - Sampling of gases from cracking processes.
          - Methods of analysis.

THE RECOVERY OF BUTADIENE

Introductory.

The recovery of butadiene is essentially the separation of the butadiene from butylenes and butanes. Unfortunately the physical properties of the compounds are very similar which makes the separation problem a complex and difficult one.

The separation processes used in the various plants involve distillation, solvent extraction, and a combination of distillation and extraction. It is therefore essential that the men who are to help operate the recovery plants have a clear understanding of these methods of separation.

However, the problem is much more complex than simple distillation or extraction might indicate. Due to the similarity of the compounds the separations

Digitized by Google

are very difficult. Therefore, equipment and controls which a few years ago were thought impractical are now essential.

The men responsible for the operation of these plants must therefore understand instrumentation and the need of close control of the units in order that the maximum amount of butadiene be produced. Where the petroleum industry has been used to thinking of cut points in terms of degrees it must think now in terms of tenths of a degree.

The following subjects should therefore be included:

1. Theory of distillation.
2. Theory of solvent extraction.
3. Theory of combination distillation and extraction.
4. Instrumentation.
5. Correlation of laboratory analysis with plant operation.

B. Polymerization and Compounding of Synthetic Rubber.

I. Production of crude rubber.

A. Natural rubber.

1. Historical aspects relating to the early discovery and utilization.
2. A discussion of the different varieties which have been used or which have been proposed for us in the past and in the present emergency. (For example hevea, landolphia, manihot, crypsostegia, guayuale, castailloa, kok sayz and so forth.)
3. A description of the methods of cultivation of these various plants.
4. A description of the processes of harvesting the rubber such as the tapping, gathering and plant harvesting methods.
5. A description of the recovery of and the methods of preparing the rubber for market (i. e. coagulation, creping, sheeting, drying, smoking of latices, and the recovery of rubber from plant tissue and grading, packaging, and handling).

B. Synthetic rubber.

1. Historical development of the making of synthetic rubber.
2. A detailed discussion of the methods of conducting the polymerization of the monomeric materials by both the bulk and emulsion procedures. It is important that a thorough knowledge of the role of emulsifying agents, catalysts, regulators, buffers, solvents, impurities, conditions, monomers, and other components—what they play in the quality and properties of the products—this knowledge should be acquired. Knowledge of the methods used in the production of neoprene, thiokol, butyl, butadiene, and butadiene copolymer should be of substantial benefit in acquiring a view of the field as now practiced.
3. Discussion of the methods of coagulation, washing, drying, and packaging.

C. Rubber substitutes:

1. To acquaint the public with the possibility of making use of the less critical materials of this class to replace rubber wholly or in part, a summation of the properties that go to make up a rubbery material and designation of those materials which may possess these properties to a variable extent would have much value. Materials of this class may be represented by Agripol, plasticized cellulose acetate, polyvinyl resins, Vistanex, lactice, and certain rubber extenders.

D. Reclaiming of rubber.

1. A discussion of the various methods of reclaiming rubber and the machinery used therein.

Digitized by Google

B. Polymerization and Compounding of Synthetic Rubber—Continued.
I. Production of crude rubber—Continued.
E. Rubber derivatives.
1. The derivatives should be discussed as to the processes and techniques used in their manufacture and the increasingly wide use for special purposes. Materials such as rubber hydrochloride, chloro-rubber, cyclo rubber, and oxidation products may act as examples.
F. Hard rubber.
1. A discussion of the methods of making, the uses of and the properties of ebonite.
II. Practical compounding of natural rubber, synthetics, substitutes, and latex.
A. A discussion of the materials that are used in compounding the rubber. They should be discussed as to their properties and the properties which they confer on the material being milled, stored unvulcanized, vulcanized, and/or the vulvanized product. Materials representative of this class are the rubbery materials, vulcanizing agents, vulcanization accelerators, antioxidants, fillers, reinforcing agents, plasticizers, softeners, pigments, abrasives, extenders, and others which are commonly used in practice.
B. A discussion of the methods of mixing and the machinery used for this purpose. Describe the roles of break-down, masterbatching, order of addition, etc.
C. Aging and processing of the compounded materials to produce the unvulcanized useful product. Describe in detail the calandering, extruding, tubing, and building up of the material.
D. Describe the molds and vulcanizing techniques.
III. Physical testing of the raw rubber, compound, or vulcanizate.
A. A discussion of the methods and significance of the various tests which are conducted.
B. A detailed discussion of the various chemical tests and of the tests and measurements of dimensions, specific gravity, tensile strength, ultimate elongation, or the stress strain, characteristics, compression strength, and the relation of load to deflection, hardness, resilience, permanent set, color, dielectric strength, coefficient of friction, aging, adhesion, abrasive resistance, tearing, cutting, and of fatiguing tests using extensions compression or flexing. Include also the methods and machinery for conducting the tests.

To supplement and give better understanding to the more practical problems heretofore presented, a certain amount of basic theory in certain phases of theoretical rubber chemistry and physics is in order. The fields or subjects which may be of most use are as follows:

1. Composition of the crude rubbery material, latices, etc.
2. Physical and chemical properties of the same.
3. Molecular structure and the means of determination.
4. Polymerization theory for the synthetics and substitutes.
5. Effects of masticating natural and synthetic rubbers. Also the physical and chemical changes involved.
6. Structure and behavior with regard to solvents.
7. Theories and phenomena of all types of vulcanization.
8. Theories and uses of vulcanization accelerators.
9. Fillers and reinforcing agents, their effects, uses, and the results of study on them by means of the electron microscope.
10. Deterioration of rubber in general and the materials or conditions which accelerate or inhibit the process.
11. Electrical behavior of the rubbers and ebonite.

2. *Course for plant operators:* Course to be built around operating techniques of petroleum cracking equipment, distillation equipment, etc. Course details to be determined as noted later.
3. Course for laboratory technicians.

Digitized by Google

COURSE FOR LABORATORY TECHNICIANS

Introductory.

I. The methods used in a control laboratory for butadiene production will not differ from those used in the usual laboratories controlling cracking plants. Both will require a great deal of gas analysis.

II. Since women will comprise the majority of the workers, the training course should be designed to provide the background of mechanics and mechanical manipulation.

III. The following should be included:

A. Instruction in the principles of low-temperature fractionation.

B. Instruction in the principles of absorption gas analysis.

C. For (A) simple demonstration, equipment should be devised to illustrate (1) the action of a fractionating column; (2) methods used for measuring gases; (3) gas calculations; (4) application of 1 and 2 to fractionation of liquefied gases.

D. For (B) equipment should illustrate (1) demonstration of absorption gas analysis methods; (2) particular application to hydrocarbon analysis.

C. Proposals to start the training and coordinate the program on a Nation-wide basis:

The problem is too large for one person.

A committee of 3 to 5 people must start finding material for technical training at once.

The committee will consist of (1) a coordinator (full time); (2) one or two travelers; (3) one or two rubber chemists.

Duties of these people:

The travelers will contact as many plants as possible where synthetic rubber is being produced. They must be armed with Government permits to get inside of these plants, factories, or laboratories. They also will visit as many training centers as possible to find out what is being done elsewhere.

The territory covered should be all (if possible) the centers in the United States where the problem of rubber is being investigated.

After visiting a place, a report should be sent to the coordinator at once. The report should contain the following information:

1. The name, nature, description of tests conducted.
2. List of special equipment and apparatus needed.
3. Where are the directions available.
4. What references are used.
5. Length of time spent in laboratory.
6. To whom does the coordinator write for more information—name and title.
7. How cooperative was the laboratory in giving the information.
8. Some evaluation of the plant visited as to efficiency, etc.

The reports should be detailed and explicit.

After a few visits, a check list can be made to facilitate correspondence. The coordinator should have a complete itinerary.

The coordinator (full-time position):

1. Without delay the coordinator should start to correspond with all places that have in the past, or are now doing training for synthetic rubber.
   (*a*) Find extent of course.
   (*b*) Course context.
   (*c*) Equipment needed.
   (*d*) Get outlines of these courses.
2. Summarize reports of travelers and correlate the above material with reports.
3. Consult with rubber chemists—
   (*a*) After each report comes in.
   (*b*) To outline courses of instruction.

The rubber chemists: These men must be experienced with the problem (*a*) either formal college organic majors, or with equivalent in experience and research; (*b*) laboratory experience in rubber—with some experience in pilot-plant work.

These men will be able to evaluate the reports of the travelers. These men will be able to outline the courses of instruction at the various levels.

Digitized by Google

D. Courses of instruction—general:

There will be at least three different courses:

1. A course for chemists and engineers.
2. A course for plant operators.
3. A course for laboratory technicians.

The course for chemists and engineers to be conducted—or at least started—by the rubber chemists.

Jeffers is to be contacted for men who are experts in the field. These men should be asked to give some phase of this course on the west coast.

The course for plant operators: This course to be exactly determined by the reports of the travelers. As soon as reports come in and are evaluated, the course starts. As more reports come in, the course is expanded.

The course for laboratory technicians: This course to give instruction in laboratory control operations and to be given by chemists with special knowledge of this phase.

E. Place of instruction for California area:

The courses should be authorized by E. S. M. W. T. and given at University of California, and to be followed up with on-the-job-training in the first plants to come into operation.

EXHIBIT No. 122

DENISON UNIVERSITY RESEARCH FOUNDATION,
Adrian, Mich., April 26, 1943.

Senator HARLEY M. KILGORE,
Washington, D. C.

DEAR SENATOR KILGORE: President Kenneth I. Brown, of Denison University, has sent to me literature including copy of S. 702.

President Brown and I have been closely associated in founding the Denison University Research Foundation. Dr. Brown also is familiar with the fact that the writer has spent several years in attempting to interest his government in establishing a National Research Foundation to care for the multitude of problems our country is now and will continue to face—I hope realistically. It would seem that the matter in this bill you are sponsoring covers very much the same ground that I have been emphasizing in my attempts to interest Congress.

I have already approached Vice President Wallace and have received a sympathetic reply, but no tangible evidence that I might expect anything more. Also our Congressman from this district, Mr. Earl C. Michener, has been approached by letter and personal interview, but I have the feeling his interest in the matter was practically nil. He implied he was too busy with war work to give the matter any attention at this time. I think time will show that Mr. Michener (a personal friend) is 100 percent wrong about both the being busy and the time. If ever there was needed what your bill and my own attempts imply, that time is certainly now. Mr. Michener has in his files some material sent him long since and which I asked him to hand to anyone interested. Perhaps it is still in his desk.

There is no connection whatever between the Denison Foundation and the National of which I write. However, I am sending you a little pamphlet concerning the one and a few excerpts copied from my previous correspondence so that my own thoughts in the matter may be clear. I am especially pleased with your sections 1, 2, 3, 6, 8, 9, 12.

If you so desire, this letter may be taken as a very cordial endorsement of this bill. I only hope that our representatives in Washington may be as alive to the needs of our country as are some of us whose names are unknown and whose opinions are brushed aside with reckless abandon. In the opinion of this writer, we are using but a small fraction of our national capabilities—and are tardy in the use of this fraction.

Kindly,

ELMER M. JONES.

Digitized by Google

EXHIBIT No. 123

BROTHERHOOD OF RAILROAD TRAINMEN,
Cleveland, Ohio, January 25, 1943.

Hon. H. M. KILGORE,
Chairman, Subcommittee on Technological Mobilization,
Senate Office Building, Washington, D. C.

MY DEAR SENATOR: I enclose herewith a photostat copy of a letter dated January 20, addressed to me by Mr. C. H. Sullivan, our New York State legislative representative, together with the enclosure to Mr. Sullivan's letter, pertaining to testimony given before your committee by Waldemar Kampffert, science editor of the New York Times, which testimony will be found on pages 78–79, volume 1, of the hearings before your committee.

You may note from Mr. Sullivan's letter that Mr. Kampffert's testimony is apparently not based on facts.

With best wishes I am,
Sincerely yours,

A. F. WHITNEY, *President.*

BROTHERHOOD OF RAILROAD TRAINMEN,
Albany, N. Y., January 20, 1943.

Mr. A. F. WHITNEY,
President, Brotherhood of Railroad Trainmen,
Cleveland, Ohio.

DEAR SIR AND BROTHER: This will acknowledge receipt of your letter of December 3, 1942, with copy of a portion of the testimony about the United States Senate committee holding hearings on S. 2721, given by Mr. Waldemar Kampffert, science editor of the New York Times, wherein the gentleman states that in New York we have a law which makes it necessary for three men to be in a steam engine locomotive, that was passed after an engineer had died at the throttle of heart failure.

My delay in answering your communication on this subject matter is due to the fact that I wanted to make an extensive investigation on various railroads in the State of New York for the purpose of ascertaining if any railroad did use three men on a steam locomotive, and in my investigations I am not able to find any place where three men are employed in this capacity. Therefore I believe the statement made by the gentleman before the Senate committee is untrue.

On all steam locomotives in the State of New York, and also Diesel electrics, there are employed one engineer and one fireman. The only place where the third man would be required would be when the engine runs light outside of yard limits; then a flagman is placed on this engine for the purpose of throwing switches and flagging against trains over the division.

Before making my reply to you I checked with representatives of both the engineers and firemen and find my statement to be true and accurate, and I am attaching to this letter a copy of section 54 (a) of the railroad law of the State of New York, for your information and ready reference.

Hoping this is the information desired, with best wishes, I am,
Fraternally yours,

C. H. SULLIVAN,
State Legislative Representatives.

GENERAL—ALL COUNTIES

LAWS OF NEW YORK—BY AUTHORITY

CHAPTER 290

AN ACT To amend the railroad law, in relation to train crews.

[Became a law April 21, 1921, with the approval of the Governor. Passed, three-fifths being present]

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section fifty-four-a of chapter four hundred eighty-one of the laws of nineteen hundred and ten, entitled "An act in relation to railroads, consti-

Digitized by Google

tuting chapter forty-nine of the consolidated laws," as added by chapter one hundred and forty-six of the laws of nineteen hundred and thirteen, is hereby amended to read as follows:

"§ 54-a. FULL CREWS FOR CERTAIN TRAINS. No person, corporation, trustee, receiver, or other court officer, shall run or operate, or cause to be run or operated, outside of the yard limits, on any railroad of more than fifty miles in length within this state, a freight train of more than twenty-five cars, unless said train shall be manned with a crew of not less than one engineer, one fireman, one conductor and three brakemen; nor any train other than a freight train of five cars or more, without a crew of not less than one engineer, one fireman, one conductor and two brakemen, and if the train is a baggage train or a passenger train actually carrying baggage, without a baggageman in addition to said crew; nor any freight train of twenty-five cars or less without a crew of not less than one engineer, one fireman, one conductor and two brakemen; nor any light engine without a car or cars, without a crew of not less than one engineer, one fireman and one conductor or brakeman. Each separate violation of the provisions of this section shall be a misdemeanor punishable by a fine of not less than one hundred dollars nor more than five hundred dollars. Each train or light engine run in violation of the provisions of this section shall be deemed to be a separate offense."

§ 2. This act shall take effect immediately.

STATE OF NEW YORK,
Office of the Secretary of State, ss:

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

JOHN J. LYONS,
Secretary of State.

EXHIBIT No. 124

CHEMICAL ARTS FORUM,
Chicago, Ill., April 21, 1943.

HON. HARLEY M. KILGORE,
Chairman, Subcommittee on Technological Mobilization,
Committe on Military Affairs, United States Senate,
Washington, D. C.

MY DEAR SENATOR: We wish to thank you for the copies of bill S. 702, which were so generously supplied in order that our members could discuss the bill and the ideas that were apparently behind the drafting of it.

We have held an executive session of our membership and have discussed this subject at length. By the unanimous vote of the quorum present, this committee has been instructed to convey to you the feelings of our organization. This letter has been read to the membership and has been passed by them as expressing their collective opinion.

Our organization is made up of technical executives, research directors, and research and development chemists and engineers. We therefore are well acquainted with technical men and their problems. Bill S. 702 fails completely to understand either the technical men, or their problems. Neither does it further the sound technical progress of the Nation, either during wartime or peacetime.

In discussing this bill, page by page, and point by point, it is apparent that its provisions could only be detrimental to the technological progress of our Nation. History has shown, and our own experience has confirmed, that regimentation is particularly harmful to technical progress. Untrammelled freedom of action and individual initiative best provide the fertility for rapid and sturdy technical advancement.

Bill S. 702 is wholly undesirable, and its enactment would harm the Nation greatly. Knowing technical men and technical problems, this bill would be incapable of enforcement.

Respectfully,

ROBERT E. ELLIOTT,
Chairman, Committee on Bill S. 702.

Digitized by Google

EXHIBIT No. 125

Mr. ROBERT S. ELLIOTT,
Chairman, Committee on Bill S. 702,
Chicago, Ill.

DEAR MR. ELLIOTT: I am interested in what you have to say about this bill, most particularly in the paragraph which I am now quoting:

"History has shown, and our own experience has confirmed, that regimentation is particularly harmful to technical progress. Untrammelled freedom of action and individual initiative best provide the fertility for rapid and sturdy technical advancement."

We therefore seem to have exactly the same ideas on this subject and testimony before the committee has curiously brought out the fact that this bill may liberate many scientists from the regimentation that now exists not alone in our major monopolistic industries, often circumscribed by cartel and other agreements, but also in some of our technical societies. Fortunately for the development of technology in this country, there are many independent scientists and technicians whose efforts might well be stimulated by an agency such as is proposed in bill S. 702.

Hearings have demonstrated that much progress could be made in the technological advancement of this country if a free access to facilities and personnel were made available to these many independent scientists. It is for the purpose of supplementing the already splendidly developed technological research divisions of large industry that this bill was designed. If the committee felt that the fullest development of our technology could be safely left in the hands of the few, this bill of course would have little value, but it has been demonstrated in this intensive period of war preparation that many of our best defense ideas came from without the industry directly interested. It emphasizes the feeling the committee has had that this condition not alone prevails during wartime, but during peacetime as well.

Having in mind that competition in this world of the future lies in our ability to make the broadest and fullest use of our technological advance, this bill is aimed to so coordinate rather than regiment the science of the future that we may well meet that competition in the post-war period.

Sincerely,

H. M. KILGORE,
United States Senator.

EXHIBIT No. 126

SHALL RESEARCH BE SOCIALIZED?

The Kilgore Bill (S. 702) Analyzed by the National Association of Manufacturers
(Pamphlet Issued May 1943)

Pending in the United States Senate is S. 702, entitled "a bill to mobilize the scientific and technical resources of the Nation, to establish an Office of Scientific and Technical Mobilization, and for other purposes." Hearings on it are being held before a Subcommittee on Technological Mobilization, specially formed within the Military Affairs Committee. Senator Harley M. Kilgore (Democrat, West Virginia) is chairman of the subcommittee. A companion bill (H. R. 2100) has been introduced in the House by Representative Wright Patman (Democrat, Texas), and it has been referred to the Committee on Patents.

Analysis of S. 702 reveals that it presents a comprehensive plan for the most ambitious project to socialize industrial research and technical resources that has ever been proposed in the United States Congress.

The bill is based on the assumption that there is now an "absence of an effective Federal organization to promote and coordinate, in the national interest, scientific and technical developments," and that there must be Federal control and coordination of the scientific and technical facilities, personnel, and resources of the United States "for the effective prosecution of the war and for peacetime progress and prosperity" (sec. 1).

Twelve purposes to be accomplished are set forth, among which are complete Government direction, planning, and control of—

(*a*) What are described as "scientific and technical facilities" including every form of property either used or intended for scientific or technical purposes includ-

Digitized by Google

ing patents, inventions, processes, methods, designs, specifications, and all "know how" used or intended to be used for scientific and technical purposes either in research or in supplying war or civilian goods or services (sec. 2 (a)).

(*b*) "Scientific and technical personnel," including all persons, except physicians and dentists, who have completed college or university studies in any branch of science or have had not less than 6 months' training or employment in a technical vocation (sec. 2 (b)).

Whenever the word "agency" or "establishment" is used it means not only Federal or State agencies but private firms or corporations and schools or colleges (sec. 2 (c)).

The act is to be executed through what is termed the "Office of Scientific and Technical Mobilization" which is directed by a salaried administrator appointed by the President and serving at pleasure, who appoints such officers and employees as he deems necessary within a preliminary appropriation of $200,000,000 and a revolving fund from properties under his control (sec. 3 (a), and sec. 9 (a)). He has at his service a "Board" and a "Committee" who perform such duties as he determines (sec. 3 (c), (d), (e)).

AN ADMINISTRATIVE DICTATOR

This administrator is given enormous power to make the act function, including the authority—

(*a*) To take and keep a census of scientific and technical facilities and personnel hitherto defined, to formulate projects and programs for their use and development, to train the personnel, and to appraise the relation of scientific and technical developments to the national welfare; also to solicit private support to these ends (sec. 4 (a) to (e));

(*b*) to foster international cooperation, and to arrange the reciprocal exchange of scientific information and personnel (sec. 4 (g));

(*c*) to review the specifications, standards, and designs of military and civilian products, also the methods of production and supply (sec. 4 (i));

(*d*) to finance in any way the purchase of any kind of property used or intended for scientific purposes, and to make contracts in the execution of his powers (sec. 4 (j)).

POWER OVER PATENTS

The bill provides for vesting in the office exclusive rights in inventions which have heretofore resulted or shall hereafter result from research or inventions to which the Government has contributed since May 27, 1941, or shall hereafter contribute, "any money, credit, physical facilities, or personnel" (sec. 7 (a)). This is directly opposite to the constitutional provision for granting to inventors "the exclusive right to their * * * discoveries."

By not limiting the inventions to be taken to those having "public use" interest, inventions are included in which the Government, as such, could have no possible interest and with respect to which the Government would not properly be exercising any right of eminent domain. The provision made for compensation for such taking is unsatisfactory (sec. 7 (d)).

The office would be provided with means by which it may acquire complete information regarding projects and developments under way within industry as well as among independent inventors (sec. 1 (4), (6); sec. 4 (a), (b); sec. 8 (a); and sec. 10). It could then destroy the fruit of the labors of those from whom the information was acquired by having the Government itself develop or turn the project over to someone else to develop, thereby vesting the completed invention in the office (sec. 1 (6); sec. 4 (b)). No redress would be available to the one who originally furnished the data on which the invention was developed.

In vesting exclusive patent rights for the present as well as the future in the office, the Government would be put in a position of necessarily entering into extensive interference and infringement litigation with industry and with individual inventors involving their conflicting interests in the respective inventions.

This provision for the vesting of exclusive rights in the office ignores the incentive given to inventors by the Constitution to encourage invention, and also ignores the incentive given to speculative capital and industry to develop new enterprises which is now provided by the grant of exclusive rights in inventions for a limited time.

Digitized by Google

APPLIES TO WAR AND PEACE

The Administrator is given special powers in (*a*) war, and (*b*) peace:

(*a*) During war to requisition the use of scientific or technical facilities, licenses, etc., and to determine just compensation for the same, subject to judicial review, with the right to sublicense, requisitioned patent licenses. He is the investigator of the efficiency of war production or supply, recommends improvements necessary and desirable, and becomes the exclusive representative of private and public applicants for allocation and priority ratings of critical material and equipment in scientific and technical research and development (sec. 5 (a), (1), (2), (b); sec. 6 (a), (1), (2), (3), (b), (c)).

For the Administrator's benefit the Selective Service Act is amended so that when on his application the "Chairman of the War Manpower Commission" certifies that scientific or technical persons are "critical" to the war effort, the Administrator becomes the exclusive authority for the occupational deferment of such persons and may direct their training (sec. 5 (a), (1), (2)). This personnel is said to number 1,700,000.

(*b*) All the other described powers of the Administrator may be exercised in time of peace to the ends described. He may make any investment necessary to the effectuation of the purposes of the act or the performance of his functions (sec. 4 (j); sec. 9 (b)), and to this end may require the production of books, papers, and other documents deemed relevant or material. This power may be exercised through any official designated by him. The courts are to enforce such powers under the threat of contempt. The refusal to supply such information or the violation of any regulations which the Commission has the power to make is punishable by fine and imprisonment (sec. 10).

UNPRECEDENTED AUTHORITY

It must be clear from the above provisions of the bill that it would concentrate in the hands of a single Government official unprecedented authority over all the properties and personnel devoted to scientific and technical research, planning, and training, not only in Government establishmets but among individuals, firms, corporations, and other forms of private employment and operation (sec. 8).

(*a*) It would compel the reorganization within the War and Navy Departments of committees and personnel engaged under the direction of or in cooperation with the military departments of the Government and make them in many respects subordinate to the Administrator. Such departments are mentioned in the bill only to advise the Administrator with respect to the necessity of maintaining secret in formation (sec. 6 (b), (c)).

(*b*) It withdraws from the Alien Property Custodian the powers which he has and presently exercises over patents and inventions (sec. 7 (a), (2), (b), (c), (e), (f)).

(*c*) The measure ignores the existing cooperation of the scientific and technical organizations of the United States now freely at the service of the Government and cooperating with the War and Navy Departments.

Schools, colleges, and universities engaged in pure research are brought under the control of the Administrator in training and direction to the extent he declares their personnel to be engaged in scientific and technical study, extending similar control to all private efforts of the same character whether individual or corporate (sec. 2 (b); sec. 4 (i), (m); sec. 7 (b), (c); sec. 8 (a)).

The effect of the measure is to authorize the complete socialization of all forms of property, plans, methods, technical information, and "know how" of all industries and all personnel devoted to scientific and technical effort. It would hopelessly confuse the relation of all various departments of the Government devoted to the prosecution of the war by reorganization of their relations to one another and to the proposed Administrator. Finally it wuld create the most despotic authority given to a single officer, and by vague and indefinite phrases it would enormously expand the enormous power conveyed.

Digitized by Google

EXHIBIT No. 127

THE SCIENCE MOBILIZATION BILL

By Senator Harley M. Kilgore

[From Science, August 13, 1943]

Science is to be commended most highly for devoting some of its columns to the free discussion of the science mobilization bill, S. 702. This legislation is of great importance to all scientific and technical people, and, finally, to all people of the Nation. Full discussion will ultimately bring out the real issues related to this bill.

More than a thousand letters have come to me about S. 702. From these letters I find that the men of science favor the bill. The vested interests, and those who are influenced or controlled by the vested interests, are against it, and they are most unscientific in their attacks upon it.

In reading the series of letters that has appeared in Science, I am impressed with the fact that most of these letters are concerned with peripheral, irrelevant, or misleading material. To illustrate, let me cite a part of the communication from Dr. Gustav Egloff, of the Universal Oil Products Co., in the issue for June 18. To support his contention against Prof. L. C. Dunn that "95 percent of our scientific and technical manpower and facilities are now highly organized and coordinated to the single end of advancing the war effort," Dr. Egloff quotes percentages from William L. Laurence's article in the New York Times of January 3, 1943, but he carefully refrains from quoting the preceding sentence giving actual figures. This is the unquoted sentence: "A survey now being carried out by our research personnel reveals that between 80,000 and 100,000 scientists are working, with about 80,000 in industrial and 20,000 in university laboratories."

In the same letter, Dr. Egloff lists 231,571 scientific and technical personnel, registered with the National Roster of Scientific and Specialized Personnel. Dr. Leonard Carmichael, director of the roster, testifying before the science mobilization committee last October, said that the number of scientists and technical men might be tripled with complete coverage, indicating that only about one-third of the available people were then listed on the roster. Multiplying Dr. Egloff's figure by three, the total would be in the neighborhood of 695,000. If, then, Dr. Egloff's 95 percent of 100,000 people, or 95,000 are at war work, the total so engaged is only about 13½ percent. This calculation is, of course, as ludicrous on the one side as Dr. Egloff's on the other. I give it only to show how figures can be used to mislead. Scientific and technical people who actually do the work know from their own experience and that of their associates the extent to which their talents are being used to prosecute the war.

Dr. Egloff of the Universal Oil Products Co., also used other interesting techniques in his fight against this legislation. I quote him:

"It is not too much to say that their passage (the two mobilization bills) might well be worth 100 divisions to our enemies".—The Chemist (April 1943, p. 229); the Journal of Commerce (April 12, 1943); the Chicago Tribune (March 14, 1943); the Washington Times-Herald (March 14, 1943).

"Their passage would be worth 100 divisions to the enemy".—the Chemist (April 1943, p. 252).

"The bill would be worth 100 divisions of trained motorized troops to Adolf Hitler."—Chicago Tribune (June 17, 1943).

Adolf Hitler wrote in Mein Kampf:

"* * * in the big lie there is always a certain force of credibility."

And:

"* * * only constant repetition will finally succeed in imprinting an idea on the memory of the crowd."

So here we have Dr. Egloff, of the Universal Oil Products Co., using two of Hitler's techniques in his effort to defeat this bill. Also, it is significant to note that the Chicago Tribune and Washington Times-Herald gave strong play to his words.

I am deeply concerned that American men of science participate in a full discussion of this legislation. They alone can provide the advice and counsel to make the bill adequate to the national need.

The bill is based on five primary needs:

Digitized by Google

1. The need for a central independent agency of Government devoted exclusively to the progress and expansion of science and technology, first to win the war and later to contribute to the peace. Science and technology need to be considered as a national resource, serving the interests of the Nation as a whole and not those of select groups. Indeed, it is the only remaining sector of our public domain. This agency should be an independent arm of Government, eventually on the same footing as the established departments.

2. The need for integration of existing Government research and development facilities. There are about 20 major and 40 minor bureaus in the Government devoted to research and development; their operation cost more than $557,000,000 last year. The excellent work of these groups should be so integrated as to widen the usefulness of their work and to provide a greater service to the public.

3. The need for active governmental support of fundamental research. The Government should give widespread support to basic research, by grants to existing nongovernmental as well as governmental groups. This would apply particularly to universities and colleges, where fundamental research should flourish. Insufficient budgets have caused our educational institutions to depend increasingly on industrial grants and fellowships. This, to an alarming degree, has reduced much of university research to the status of handmaiden for corporate or industrial research, and has resulted in corporate control of many of our schools.

4. The need for a uniform and effective policy to achieve the fullest utilization of scientific and technical manpower in wartime.

5. The need to promote the use of Government patents in the interest of the public. These patents are to be clearly distinguished from privately owned patents. They are of three types: Those derived from Government research and development and assigned to a Federal department or bureau; those held by the Alien Property Custodian; those derived from nongovernmental research financed by Federal funds.

The use of these patents needs to be promoted, and they should be administered for the public good.

I have long realized the basic importance to the welfare of the country of a free science and an expanding technology. I have long advocated a far-reaching program of governmental research. The experience of Federal agricultural research provides ample precedent for such a step. I have also observed that all advances in the public interest are fought bitterly by selfish interests. Examples have been the establishment of our public-school system, public ownership of municipal water supplies, enforcement of sanitation of the milk supply, range and forest conservation, public ownership of power, and so on.

Scientific and technical men hold in their heads and hands the collective knowledge of the ages. Whose knowledge is it? The group, more than any other, can help achieve these purposes: To free technology for its maximum use in this technological war, and a free technology for the greater advancement of the American people.

×

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

4. M59: Sci 2

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 4

JUNE 4, 1943

PATENTS

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1943

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION
HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HENRY H. COLLINS, JR., *Executive Secretary*
HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

Page

Testimony of Senator Homer T. Bone 315

Schedule of Exhibits

No.	Exhibit	Appears on page
128	Cemented tungsten carbide, statement by John Henry Lewin	328
129	Tetracene, statement by Allen Dobey	374
130	Magnesium, statement by Monroe Karasik	391
131	Communication patents, statement by William H. Bauer	402
132	German cartels, statement by Heinrich Kronstein	409
133	Acetic acid, statement by Irving Lipkowitz	446
134	Zinc, statement by Allen Dobey	464
135	Paraflow and methane steam process, statement by John R. Jacobs, Jr	490
136	Dyestuffs cartel, statement by Charles D. Pack	502
137	Synthetic rubber, statement by Robert M. Hunter	542
138	Natural rubber cartel, statement by Alfred E. Kahn	607
139	Patent pools, Standard Oil Co.–I. G. Farben, statement by Patrick A. Gibson	616
140	Methanol, statement by John R. Jacobs, Jr	674
141	Standard Oil Co. of New Jersey, statement by William S. Farish	686
142	Comparison of certain Senate bills relating to patents	700

Alphabetical List of Authors of Exhibits

Page

Bauer, William H., attorney, Federal Communications Commission 402

Dobie, Allen, special assistant to the Attorney General 374, 464

Farish, William S., president, Standard Oil Co. of New Jersey 686

Gibson, Patrick A., special assistant to the Attorney General 616

Hunter, Robert M., special assistant to the Attorney General 542

Jacobs, John R., Jr., special attorney, Antitrust Division, Department of Justice 490, 674

Kahn, Alfred E., member of the staff of the Patent Cartel Division, Department of Justice 607

Karasik, Monroe, special attorney, Antitrust Division, Department of Justice 391

Kronstein, Heinrich, special attorney, Antitrust Division, Department of Justice 409

Lewin, John Henry, special assistant to the Attorney General 328

Lipkowitz, Irving, economic expert, Antitrust Division, Department of Justice 446

Pack, Charles D., special attorney, Antitrust Division, Department of Justice 502

Digitized by Google

Digitized by Google

SCIENTIFIC MOBILIZATION

FRIDAY, JUNE 4, 1943

UNITED STATES SENATE,
SUBCOMMITTEE ON WAR MOBILIZATION,
OF THE COMMITTEE ON MILITARY AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 10:40 a. m., in room 104-B, Senate Office Building, Senator James E. Murray (acting chairman) presiding.

Present: Henry H. Collins, Jr., executive secretary of the committee.

Also present: Walton Hamilton, Antitrust Division, Department of Justice.

Senator MURRAY. The purpose of the hearing this morning is to have testimony from Senator Bone on the subject of patents. You may proceed, Senator Bone.

STATEMENT OF SENATOR HOMER T. BONE

Senator BONE. Mr. Chairman, the statement that I propose to make is somewhat general in its terms and is intended to be such a general statement rather than a discussion of specific matters.

I make this statement in a preliminary way because the field of patents is probably as complicated as any field of human endeavor and, therefore, I will not attempt to discuss all the various aspects of patents which would consume all the time of the committee for the next 6 months.

The safety of the Nation and the welfare of its people are dependent upon the progress of science and the useful arts. The Congress was charged by the Constitution with the steady development and the full and immediate use of discoveries and inventions. The letter-patent currently issued is the device chosen by Congress to promote this public end. It is, therefore, the duty of Congress to observe from time to time the operation of "the patent system," and by appropriate legislation see to it that the grant is held true to the end which the Constitution intended it to serve. As the President of the United States wrote on April 13, 1942:

> Patents are the keys to our technology, technology is the key to production, production is the key to victory.

For many years the people of the United States suffered scarcity in the midst of plenty. In the shadow of abundant natural resources we have seen hundreds of idle plants and millions of unemployed citizens. As a result a nation, rich in the materials of useful goods,

Digitized by Google

has stood in critical danger because of shortages of things essential to human welfare.

The war-production program of the last 2 years, spurred by the will of the American people and the necessities of defense, has suggested possibilities inherent in our economy.

But the fact has fallen far short of the promise. Many known processes for the more abundant production of commodities and services have in the past been unavailable to persons who would have been glad to put them into production. Many advances in the industrial arts have been held back or have known a very limited use. In many domains we lack—where we might have had—devices, discoveries, and inventions and the plant facilities for their conversion into a more abundant production of commodities and services for our people.

The strength of our fighting front is the strength of the industry behind the lines. We cannot fortify our military outposts abroad without fortifying our economic institutions back of the line.

There must be strength to withstand the onslaughts which the future will inevitably bring.

TECHNOLOGY AND THE WAR

The patent system, like every other instrument of the national economy, needs to be geared to the war effort.

Access to the necessary technology must be assured to all who directly or indirectly turn out the material of war. At present some concerns still hesitate to solicit contracts because of a fear that in manufacture they may "infringe" a patent. As an all-out is called for, the fear of infringement suits still hangs heavy over the whole industrial system.

Alien or enemy ownership in technology has laid its paralyzing hand upon nerve centers in our economy. In particular German concerns acquired a host of domestic patent rights; they refused to allow licenses to our domestic concerns, or imposed terms which seriously shackled production. Hearings before my committee have demonstrated the paralyzing effects of such arrangements between American and German firms in respect to tungsten carbide, ammunition, dyestuffs, synthetic rubber, and other vital war materials.

And it is not easy to get to the heart of the mischief. Patents, which represent rights in technology, are transferable. There are assignments, licenses, leases, contracts of all sorts and kinds. Corporations have affiliates and subsidiaries in other countries.

For one to hold rights for someone else in "beneficial ownership" is a common device of the law. An I. G. Farben lawyer can easily concoct a legal rigmarole by which the nominal owner is one person and the real owner another man. A number of transfers may utterly confuse the picture. Axis concerns were good at the trick of resting nominal ownership in the hands of a corporation of a neutral country and still being able to pull the invisible strings. Even American concerns have been used to make alien ownership. The whole business presents a host of legal mazes which it would take the courts years to unravel.

The point is that we cannot, especially in war, deal with the owners of rights in technology. We must deal with the rights themselves. It is access to the industrial arts which the war effort requires.

Digitized by Google

THE ALIEN PATENT PROBLEM

Our Government allows aliens to obtain patents upon the same terms as American citizens. In such grants men whose allegiance is to a foreign power acquire rights in, and control over, strategic industrial processes. It is essential to cut through all legal fictions to the industrial realities beneath. No procedures which move on the nominal or legalistic level can prove effective.

1. The focus is alien control of technology, not alien ownership of patent rights. In anticipation of our entrance into the war the Third Reich has taken precautions to see to it that its subjects, personal and corporate, divest themselves of formal ownership. Its control over the useful arts remains, and it is this strangle hold which needs to be broken. It must be broken.

2. To that end complete information is necessary. Not only must all patents and all assignments—as now—be made matters of public record, the legal obligation to full disclosure of alien patents must extend to all licenses, all agreements in escrow, all relations of corporation and subsidiary, all contracts of whatever kind used to secure or to give effect to a patent right. A statute should make null and void any instrument of that character not made a public record.

3. The obligation to record should extend as far as necessary to achieve the general objective of full knowledge of alien ownership and control. Often rights in American patents are given as consideration for rights under foreign patents. Where cross licenses are exchanged, and one of the two parties concerned is—or in the past has been—an alien, the whole transaction needs to be put on open file. Such are the ramifications in the use of a patent, and such are the interlockings between patents, that it is hard to see how the command to register can stop short of all patents, and all instruments of their use, in all defense industries. If endless bother and crippling delay are to be avoided, full publicity must be required of all agreements which give effect to all patents.

4. Alien, rather than enemy, is here the key word. A large number of German patents have been transferred to persons whose political allegiance is Holland. A far larger number are at present nominally the property of individuals who are citizens of, or corporations chartered by, Sweden or Switzerland.

5. The office of the Alien Property Custodian is at best not too neatly fitted to the task of having and holding alien patents. At law a patent is not an ordinary sort of property, and the law of trusts is not appropriate to its effective use. The task of the Custodian is to seize the alien property, to secure and conserve it, to bring it along as an investment, to make it yield as large a return as possible. He must, of course, take it out of enemy ownership, but that done his task is by office and tradition essentially that of managing an estate, for he is a public guardian of a private interest.

6. The patent departs radically from this norm. It is, as the Supreme Court has recently said, a private claim in a public domain, an instrument which gives effect to a public policy. As an instrument by which access to technology is given or denied, it is affected with an interest to the whole economy. In time of war this public interest becomes the dominant mark of the grant. A privilege from the Government must not be used to restrict or defeat its war effort.

Digitized by Google

It must be used to secure that all-out in respect to output upon which military success depends.

7. It seems evident, therefore, that the control of alien patents, in the most comprehensive reach, must be lodged in somebody who is charged to make of it a positive instrument for winning the war. A body such as the technological commission proposed by Senator Kilgore might meet this demand.

DUTIES AND RESPONSIBILITIES

An exclusive right in a technical process not only accords a right but also imposes a responsibility. It enables its owner to collect a toll upon the use of his invention. As a charge for a contribution to science or a useful art the royalty is quite legitimate. But an owner who is unmindful of his responsibility may levy unfair tribute upon the pocketbook of every man, woman, and child in the Nation. He has it within his power to wield a control which may reach out to affect the standard of living of the people. This control can, if responsibility be forgotten, be employed to restrict opportunity, impose a brake upon production, clog the channels of employment, and help sterilize the war program.

The grant of a patent imposes upon its recipient duties as well as privileges. Experience and the testimony before the Senate Patent Committee has shown that we can no longer afford to allow every patentee to be the sole keeper of his own conscience. As he becomes sensitive to personal and corporate advantage, sometimes he becomes obtuse to the obligations of his fiduciary office.

It is necessary to establish safeguards to protect the national interest against the abuse of the patent privilege by a positive definition of the duties which attend the patent grant. The Congress, of course, cannot infuse social responsibility into the hearts of business executives. What it can do is to make obligations so specific that neither executive nor courts can mistake them.

It can blaze the path so clearly that corporate officials may conduct their affiairs in ways which carry no jeopardy to the national interest. As citizens of the American republic officers of corporations occupy positions of public trust. Owners of patents have a fiduciary responsibility to their fellow citizens in a free democratic society.

It was an obligation to stockholders, compromised more or less by personal interest, which led our corporate executive to deal with Axis concerns controlled by the Nazi state. It was an indifference to public office and duty which led them to deliver control over vital American resources into the hands of the Farben crowd.

In a democracy patriotism must come first; if need be, new laws must be written in order that it may come easily, naturally, as a matter of course.

PATRIOTISM AND GOOD BUSINESS

If the Nation is to endure, there can be no separation between patriotism and good business. Executives, with an eye to profits, must so channel their acquisitive activities that the result is to enhance the strength of the Nation and serve the general welfare. Where public

Digitized by Google

good and private gain are in conflict, it is the urge toward profits which must make way. This is the law of self-preservation for a democracy. And there is no other.

A patriotism so dulled that it will respond only to a cash incentive has lost its character. If citizens of our economy have become so materialistic that without monopoly profits they cannot be patriots, the cause of popular government has fallen on evil days. So long as our Government is representative government it is everybody's business.

The duty to protect and defend the Constitution, as it has become manifest in a living nation, is imposed upon all. The spirit of a free people cannot endure, if a privileged group among us is exempt from its call. The law by which we are compelled, and the spirit of a free democracy by which we are guided, must be brought into accord.

The great story of knowledge called technology is a legacy from the past. Enriched by current inquiry, it is a bequest to the future. Upon the man or corporation who benefits from the Government's grant is imposed the obligation to conserve, employ, and develop the useful arts which he passes on. A clear abuse of the fiduciary trust should lead to the cancelation of the instrument and the restoration of the invention to the public domain.

That, Mr. Chairman, is the formal statement that I desire to present to your committee in connection with your inquiry into the matter before you.

Senator MURRAY. Thank you, Senator Bone, for your very able statement.

I assume that in your committee studies, you have uncovered many examples of the abuse of these patent rights.

Senator BONE. Last year we carried on extensive inquiries covering cartel arrangements involving some of our large American business enterprises and the German Farben crowd.

The alliance revealed was a very close one. The extent and degree of control exercised by the Farben organization, which was an instrumentality of the Hitler government, presented an astounding picture.

Senator MURRAY. Was it deliberately planned, part of a deliberate scheme on their part actually to control this country and its production program?

Senator BONE. Upon the part of the Farben organization which upon the accession of Hitler, became an instrumentality of the German Government, I think it was both business and political.

Farben was Hitler and Hitler was Farben. The German Government bent this instrumentality to its own ends and purposes. Every Farben organization set up anywhere in the world was a listening post for the Hitler Nazi machine and, therefore, it performed a political function in the field of international policy and polity.

I think the record proves that beyond any doubt. We did not finish all of the field of cartel arrangements. There were two that were not touched upon, both of which were vitally important and in my judgment should have been inquired into and the record disclosed for the public.

The American businessman went into that arrangement because, through patent organizations, an almost airtight control over certain economic processes could be achieved. For instance, in the metallurgi-

Digitized by Google

cal field, in the chemical field, and in the dye field—but in the metallurgical and chemical fields primarily—an almost complete and airtight control of the business of the entire world could be achieved.

The control rested naturally and necessarily upon patents.

The purpose of the Farben crowd, made evident by many of these contracts, was to give big American concerns most if not all of the American market in exchange for which Farben had the rest of the world, and it was simply a device which enthroned a modern type of feudalism. It was feudalism in a new dress adapted to modern business practice.

They simply divided up the whole world for exploitation.

Senator MURRAY. And the American concerns entered into that scheme wholeheartedly with the full knowledge of what they were doing?

Senator BONE. They either knew or you would have to charge them with a form of stupidity the like of which you and I never in our lifetime witnessed.

The contracts reveal the story if you want to read the nine volumes my committee turned out. You will find hundreds and hundreds of exhibits consisting of exchange of correspondence, interoffice memorandums, contracts that went into the minutest detail of their business arrangements.

Mr. COLLINS. Senator Bone, I believe you wanted to insert some of that material in our record?

Senator BONE. Here are excerpts from some of the more interesting aspects of the cartel hearings before my committee. The excerpts concern 13 of the most important products of modern industry.

The control of these products arose out of patent controls, and the effective control all over the world of all the world markets was made possible through these cartel set-ups.

If any man attempted to invade that monopoly field by some invention of his own they would threaten him with an infringement suit and generally frighten him into submission because they were powerful enough to wreck him. A small man could not stand up in the face of innumerable infringement suits. It would break him.

Senator MURRAY. A patent is not of value to an individual who is not in the combination or hasn't the immense wealth to back him up?

Senator BONE. I will leave these exhibits with you and ask that they be printed in the record.

Senator MURRAY. They will be included in the record.

(The material referred to was marked "Exhibits 128–141" and appears on p. 328 and following.)

Senator BONE. I will give you an illustration. For instance, cemented tungsten carbide was one of the outstanding manifestations of how effective monopoly control can be. It is almost the hardest material known. It is made up in small bits which are put onto the edge of a cutting tool, on lathes and the like. This cemented tungsten carbide will cut through steel as though you were cutting a chunk of putty with a knife. The Krupp crowd, by cartel arrangement with one big American concern, established a price in America which made its wide use, in my judgment, absolutely prohibitive. Apparently no great effort was made to stimulate the use of it here at the very moment when Hitler was building his vast panzerized and mechanized

Digitized by Google

machine to overwhelm the world. In my judgment, without cemented tungsten carbide the German military machine could not have been built in the time that it was built and in the efficient fashion that it was built. By virtue of this control, only about three small American concerns were given licenses of somewhat restricted character by the American cartel member. One man holding that license, a small American concern, testified before the Patents Committee of the Senate. In this connection I have to use round figures because I have forgotten the precise amount, but he testified that he had an order from a Government agency for some of the cemented tungsten carbide cutting edges. Under his license agreement he was required to charge in excess of $8,000 for these pieces of cemented tungsten carbide, whereas he, with his equipment, could have made them and sold them to this Government agency for around $3,000 and made a good profit.

Senator MURRAY. It was not merely a question of profit at all?

Senator BONE. It was a question of absolute control by a world cartel combine of which the Krupp-Farben-Hitler crowd was a part, which compelled this little fellow to charge his Government $8,000 when he could have sold it for $3,000. In other words, the taxpayers in this country got nicked in that one transaction about $5,000.

That illustrates the point I tried to make plain in my statement that these men were not above putting these rather crass considerations above the war we are facing. That testimony, I believe, is the testimony of Mr. Firth who was a licensee from the American wing of the Krupp cartel monopoly.

About the time Mr. Firth testified, the American concern that was in this friendly position with the Hitler crowd, through the Krupp tie-up, used enormous numbers of full-page ads in newspapers all over the country to explain how sweet and gentle Germany had been in dealing with us. We will contemplate that picture a little differently when we count the casualties in this present conflict with Germany.

The time has come to end that kind of business and not permit any American citizen or firm to enter into one of those feudalistic combines to control the business of the entire earth. Until such relationships are made apparent to the people of this country by a complete and full revelation achieved by filing all the documents and contracts in a public place in this country, the people of this country will never know just what is being done.

This much I think, Mr. Chairman, may be said. It is merely a realistic contemplation of this problem. These Americans, by these contracts, bound this country and the people of this country to an economic pattern more persuasive and effective in shaping the lives and destiny of the people of this country than we accomplished by many treaties which were formally ratified by the United States Senate. The Senate has spent hours and days discussing treaties. They were formally ratified or rejected, these treaties, and yet the gentlemen in the big business world of America sat at their mahogany desks and made combinations among themselves and with Farben and Krupp and entered into what amounted to treaties among themselves that did more to shape the economic destiny of the people of the United States than any treaty that we were considering in the United States Senate.

Digitized by Google

They were making and unmaking the business pattern of the entire world. They were allotting markets and fixing prices on life-saving materials, life-preserving drugs. They were saying how much might be made and how much might be sold of many vital things, and how much the people should pay for them.

This cemented tungsten carbide example requires nothing else to demonstrate the grim necessity of getting out from under that sort of private Government.

I want to terminate this statement by saying that in my own judgment the Farben crowd, being very smart gentlemen and having emerged from the last World War stronger than ever, will see to rehabilitating their great business machine by organizing new corporations in other countries, and unless we are very careful, more forthright and successful and more courageous than we have been in the past, we will end this war with the Farben crowd still dominating vital markets and it would be a supreme tragedy. That part of the war would be lost, Mr. Chairman.

Senator MURRAY. Senator Bone, so far as the immediate situation is concerned, I think this bill which has been introduced by Senator Kilgore providing for the mobilization of our scientific and technical resources, the establishment of an Office of Scientific and Technical Mobilization, would be helpful.

Senator BONE. Mr. Chairman, I have not had an opportunity to read the new bill. I understand that it is somewhat different from the one which I read last session. Since I read the first bill I have had a great many office problems of my own. With such a mass of work in my office, I have had no chance to go through the revised bill.

Senator MURRAY. You think it is a matter that should be given careful study?

Senator BONE. I think the proposals of this bill should be given most careful study. A bill like this probably would not have been introduced had there not been frightful abuses which challenged the author of this bill. No one so far has come forward and said that the records that were introduced before the Senate Patents Committee were false. They have merely said they presented a wrong picture but no one so far has said that the contracts were not set out at full length and presented a cold realistic picture of the relationships of these men of the cartel world.

Just a few days ago, and this is very challenging, the stockholders of Standard Oil of New Jersey were asked to agree not again to enter into contracts with the Farben crowd after the war. I think it was the president of Standard who said they were affronted by the suggestion by minority stockholders that they should not enter into these harmonious business relations with Farben after the war. I cannot understand why they would be affronted by the suggestion that they break loose from a country that is butchering our sons today, and that through these very cartel combinations was able to take advantage of and acquire the technical knowledge that we possessed in this country; because, Mr. Chairman, through those means we helped to arm our enemies. We gave them vital information. We sold them magnificent airplane engines. We sold them steel. We sold them technical knowledge, and it is coming back to us in blood and sweat and tears, but we are assured that this kind of thing is "good business."

Digitized by Google

The result is we are facing a very great economic crisis in this country due to the impact of war upon our economy. We face the frightful burden of deaths. The birds are coming home to roost. You cannot safely arm a country which for years has been declared a potential enemy of this country. You cannot pour out our resources to help arm an enemy without some day having to sit in sackcloth and ashes as the result of such blind folly. That is exactly what we face today. I think any realistic citizen knows that.

Mr. COLLINS. Senator Bone, you introduced a bill last year as the result of your hearings, did you not?

Senator BONE. Yes. Certain bills were introduced before the hearings. Those bills dealt with the patent system as it is operated in this country. There were three Senators on each bill. We undertook to get out of the way a complete picture of the cartel system before we went into a discussion before the committee of the technical provisions of those bills, and because the committee met and decided they did not want to have any more of the picture of cartels unfolded, the hearing came to an end before we got into a discussion of the technical aspects of those bills. There were two of them. There was also a third bill introduced by Senator Lucas, who was a member of the committee, and I am at the moment considering the reintroduction of that bill with some modifications. It is not precisely a bill dealing with the patent system, as such, but rather with remedial measures that have to do with certain aspects of the antitrust law which would be invoked in case of existence of a cartel system which created a monopoly.

Mr. COLLINS. Would it be possible for you to file with this subcommittee copies of those bills which were introduced last year?

Senator BONE. Yes; they will be available from the clerk of my committee. I am sorry I cannot give you the numbers of them. It might be that you might introduce into your record all three of them or the one that Senator Lucas introduced.

Mr. COLLINS. I think Senator Kilgore's intention, as he has often spoken of it, was to incorporate in this bill certain patents features that would be applicable to the war situation. My understanding is that your bills are related to a more comprehensive study and revision of the patents laws, both in war and in peace.

Senator BONE. That is right. One of them in which Senator O'Mahoney was primarily interested was largely the outgrowth of the T. N. E. C. hearing, during which Dr. Walton Hamilton testified. I think Dr. Hamilton is familiar with that bill that Senator O'Mahoney introduced, and Senator La Follette and I joined with him in introducing it.

Mr. COLLINS. Could you have prepared a brief analysis of the difference between the field covered by your bills and the field covered by the patents features in this Kilgore bill?

Senator BONE. I would be happy to do that if I had anybody on my staff who could take time to do it right now, but we are so immersed in work that it is very difficult to take somebody off my work that is piling up to do this kind of work and make break-downs of the differences between the two bills. During the hearings of the patents committee I had some extra clerks.

Mr. COLLINS. I do not know whether Dr. Hamilton would be able to give any help on that or not.

Digitized by Google

Senator BONE. I would be glad to supply any information that I can on the bills themselves, but I do not believe that I could find time for a member of my staff to do it. You could print the bills side by side and point out the differences.

Mr. COLLINS. Dr. Hamilton, would you be able to prepare a brief on those differences?

Dr. HAMILTON. I think I probably can find someone to do it. I would not be able to do it this week or next week myself.

Mr. COLLINS. That would be very helpful for the record.

(The material referred to was marked "Exhibit No. 142" and appears on p. 700.)

Senator MURRAY. Senator Bone, do you believe that there is any intention on the part of these international combinations to continue to undertake to function after the war is over, as they did in the past?

Senator BONE. I think there is no doubt about it. This meeting of the stockholders of Standard Oil the other day, when they voted down deliberately a resolution to pledge themselves to abandon post-war relations with Farben, is an indication of some sort. As a lawyer, I would conclude they were hopeful of renewing their relations with Farben after the war.

In many of the pieces of correspondence, Mr. Chairman, in this patents hearing, were expressions indicating the fact that the threat of war seemed very real and that, in case of such an unpleasant interlude of war, they would have to suspend their pleasant relations, but after that unpleasant interlude was over they would hold hands again, and it could all be fixed up in accordance with their existing understandings. If the law in the meantime intervened to prevent a renewal of the contracts, they would then recognize the "spirit" of the previous contracts that bound them in any new contractual relationship. That, in substance, is about the effect of the documents exchanged between them. It was all very beautiful and very harmonious.

Senator MURRAY. It was very gruesome, I should say.

Senator BONE. I have my own western expression for it, but gruesome is a nice chaste word for it.

Senator MURRAY. Have you any information with reference to what is going on in Switzerland at the present time in connection with this problem?

Senator BONE. I only know that there has been a good deal of manipulation of legal identities, and probably Switzerland, because of its neutral position and its accessibility as a field of operations for lawyers, will be found harboring some corporate identities that will disguise Farben activities. I think when the war ends you will find that will be probably true of the Scandinavian countries also. Their corporate laws would be utilized to shelter some corporate creature that will be Farben in disguise.

Senator MURRAY. Carried to its fullest extent, these plans would give these international concerns practically economic control of the world, would they not?

Senator BONE. Mr. Chairman, I want to say that the control achieved through the cartel system is as near feudalism as anything could be devised in these modern times of ours. It was feudalism in a new dress. The control was airtight. Cartel members want stability and monopoly. The thing is essentially a negation of "capitalism." It

Digitized by Google

will spell the end of classic and orthodox capitalism if it continues because, as I see capitalism, it is a system of free enterprise in which there is a free play of competitive forces. These gentlemen of the cartel world do not want "capitalism." They want "monopoly" and it is business feudalism. They want one group to control through a vertical and horizontal trust, and that, sir, is not capitalism. This device is a much more destructive force, as far as true capitalism is concerned, than even what the Communists have brought forth. The world is naturally suspicious of what Communists say, but these gentlemen in the cartel feudal set-up are outwardly for capitalism but this cartel system postulates the death of capitalism in its orthodox form.

I do not think capitalism, as we understand it, can survive in the face of a cartel system in the major lines of business. Capitalism could only endure then among the little fellows who compete vigorously with one another.

Senator MURRAY. Even among the little fellows, isn't it true that the same kind of effort to control and dominate prevails within the individual countries and independent or free competition is passing out entirely?

Senator BONE. That is right. Free competition is passing away and we are, oddly enough, at the moment, when we hear much defense of the capitalist system, witnessing the commencement of its extinguishment. That black-out is coming about because stanch defenders of capitalism further the cause of the very creature they are bringing into being, the Frankenstein of monopoly which in itself invites the utter destruction of the capitalistic system. That is a fairly accurate portrayal of what is happening.

Senator MURRAY. Don't you think that some of these captains of industry in the United States are beginning to realize the danger that is developing and are now beginning to feel that they should devote some effort to preserving free enterprise in this country? They seem to profess that, at least, and I have read in the newspapers speeches by some of the representatives of the biggest industries in the United States making pleas for the preservation of small business. Do you think those are sincere efforts on their part or sincere expressions?

Senator BONE. I do not know how sincere some of them might be in statements of that kind. I would not sit in judgment on their honesty of expressions, but I know that when you enthrone monopoly you decree the death of the little fellow in business. He cannot exist.

Senator MURRAY. And when any concern ever achieves monopoly in any field, they are very loath to surrender it.

Senator BONE. That is right. The moment monopoly is achieved, they want to hang on.

Senator MURRAY. Regardless of its effect upon the people as a whole?

Senator BONE. That is right. Mr. Thurman Arnold put it accurately when he said that these big fellows want stability. They want regularity of earnings. It is a perfectly understandable attitude of mind, within itself. It does not indicate villainy; but when they achieve the kind of stability they want, the absolute control which alone will give that stability is to be found in monopoly. Every impulse to achieve a monopoly, and that is what the cartel gave and that is why it was so delightful to the big boys in this country. They loved it. They

Digitized by Google

wanted it because the little fellow had no more chance than a snowball in the nether regions. Competition was dead.

There can be no such thing as a free enterprise system left in America if the philosophy of that cartel crowd becomes enthroned and predominant. Free enterprise will die in America except in very limited fields. There will be a very few left on the ragged fringe and they won't hurt the big fellows, and when I say that, I mean the monopolists. That is the grim thing that faces us in America.

We should quit fooling ourselves with slogans.

Senator MURRAY. What do you think of the possibilities of the Antitrust Division of the Department of Justice being strengthened and enabled to carry on a struggle to overcome this situation? Do you think that they can succeed in controlling a monopoly.

Senator BONE. The Antitrust Division, over the years, as every lawyer in Congress knows, has been starved for funds.

It is only in recent years that it has had sufficient funds to operate on. The antitrust law has been a joke. It has been so much of a joke it has been the butt and target of ridicule on the stage in America and of businessmen in general, and yet it is the only method by which you can breathe the breath of life into the antitrust law and protect the little fellow who is a part of a free enterprise system. It seems peculiar to be defending the little fellow's rights and yet go right along with combinations that are strangling the little fellow.

It is a ghastly joke—on the small businessman and the people.

We persist in a perversion of logic. We assert on the one hand that we want free enterprise and, on the other hand, we allow these monopolies, representing economic feudalism, to stifle free enterprise. We are going to have to make grim decisions in America if we want to keep a system of free enterprise. Shall we retain this greater freedom or surrender that to monopolists?

The Axis countries claim they have more efficiency in government by having dictatorship, but free people are not willing to pay the price for that type of efficiency. Axis philosophy in business is equally deadly to the small businessman.

The dictators can move armies around in a way that we cannot, but Americans would not stand for that kind of business. Free men do not want to have that sort of machinery dominating their lives.

Senator MURRAY. This is the most serious question that is confronting the people of the United States today, is it not?

Senator BONE. I think that is right.

Senator MURRAY. And it seems to me that we should begin carefully to study and determine what the future of this country is going to be because it is very rapidly evolving into a totalitarian system.

They complain every day and you read in the papers attacks on bureaucracy, which is the result of these combinations. You cannot have these powerful combinations without bureaus to undertake to control them to some degree, at least.

Senator BONE. There can very easily grow up two forms of totalitarianism: one the Axis political type, governmental type; and the other an autocratic bureaucratic private monopoly. The cartel system is a fine example.

Oddly enough, we level all our diatribes and turn all our guns on political autocracy and all the time the other type is entrenching itself firmly in our own Nation. It is a deadly threat.

Digitized by Google

If one is curious about that, he can read the nine volumes that our committee has on file on the cartels; how they completely dominate the world in some of the most vital aspects of our life and how these big fellows were completely in control. It is a story of autocracy, dictatorship, and feudalism, written by the authors of this deadly enemy of a free-business system.

Senator MURRAY. The committee is very grateful to you for coming here this morning and giving us the benefits of your studies on this very important subject. We want to thank you for your contribution.

Senator BONE. I am very happy to have been before you, Mr. Chairman.

(Whereupon, at 11:15 a. m., the committee adjourned.)

84949—43—pt. 4——2

Digitized by Google

EXHIBIT No. 128

CEMENTED TUNGSTEN CARBIDE

Statement by John Henry Lewin

INTRODUCTION

I appear here in obedience to subpenas duces tecum served upon me and upon my superior, Mr. Thurman Arnold, assistant attorney general. Pursuant to these subpenas, I have produced here this morning exhibits relating to an important machine-tool metal, known as cemented tungsten carbide, which are mostly copies of communications and other documents furnished principally from the files of the General Electric Co., its subsidiary, International General Electric Co., another of its wholly owned subsidiaries, Carboloy Co., Inc., and, to a lesser extent, from the files of some of the sublicensees of Carboloy Co., Inc., and also from the files of Thomas Prosser & Son and Union Wire Die Corporation.

These documents, and the facts they disclose, were first revealed to the Government in 1940, when they were voluntarily furnished in aid of a routine grand-jury investigation in the southern district of New York of possible violations of the Sherman Antitrust Act. As a result of that investigation indictments were returned on August 30, 1940, and October 21, 1941, against the following corporations and individuals: General Electric Co.; International General Electric Co., Inc.; Carboloy Co., Inc.; Fried. Krupp Aktiengesellschaft; Walter M. Stearns, manager of special contracts of General Electric; Zay Jeffries, chairman of the board of Carboloy; Walter G. Robins, president of Carboloy; charging them with monopolizing, attempting to monopolize, conspiring to monopolize, conspiring to restrain interstate and foreign commerce, all in violation of the Sherman Antitrust Act, and conspiring to restrain foreign commerce in violation of the Wilson Tariff Act. I introduce these documents as exhibits 1 and 2.

Except to answer such questions of the committee as I may be qualified to answer, I shall confine my testimony to an orderly recital of the facts which the documents appear to reveal—to a large extent quoting directly from the document themselves—to comments which may be necessary for purposes of explanation, and to the drawing of such inferences as anyone who has time to study the documents might also draw. I understand that the purpose of these hearings is not to punish for any violations of law or questionable practices or to cast odium upon any person, but rather to discover, from illustrations of what can be done practically under the present patent system, what correction in the system is necessary. I shall, therefore, endeavor to point out these facts as illustrations of practices which may be encountered under our present system. I should like my testimony to be taken, not as testimony of original facts peculiarly within my knowledge, or as expert testimony, but rather in the nature of a lawyer's explanatory opening statement of facts which documents in his possession tend to substantiate.

The documents which I have produced show that the commodity which was allegedly subject to monopolization and restraint by the use of United States patents is hard metal composition (principally cemented tungsten carbide) which is the best material yet discovered for making cutting edges of machine-cutting tools and wire-drawing dies, and hence a product invaluable to the Nation in its war preparations. Such hard metal composition is fabricated principally into (a) blanks for cutting tools, such as lathe tools, milling cutters, reamers, borers, drills, saws, and for other devices used with machine tools for the cutting and machining of metals in the automobile, aircraft, tank, shipbuilding, munitions, and other heavy-production industries; (*b*) nibs for dies used for drawing out wire, tubing, metal rods, etc.; (*c*) extrusion dies used for forming metal articles, such as screws, bolts, etc., and cartridge-shell casings for rifles, machine guns, and artillery; (*d*) wear resistent parts of factory equipment which are subject to extreme and abrasive wear; and (*e*) wearing surfaces of precision instruments, such as gages, calipers, and other measuring devices.

Digitized by Google

Such hard metal composition is made by cemeting or binding together, by means of a process called "sintering," extremely hard but brittle particles of tungsten carbide, tantalum carbide, or titanium carbide by a matrix of iron, cobalt, or nickel. The resulting product has the hardness of the carbide and the toughness and strength of the auxiliary binder.

The documents I have produced here tell the story of the use of patents, continuously throughout the 12-year period from 1928 to the latter part of 1940, which resulted in monopolizing the American market; limiting American production of such hard metal composition and tools containing the same; cutting off American imports and exports; dividing up world markets between American and German interests by cartel agreement; permitting since 1936 the Krupp Co. of Essen, Germany, to decide who should become American manufacturers; and the fixing and maintaining of unconscionable and prohibitive prices and resale prices (as high as $453 a pound) throughout the United States.

The complaint which initiated this grand-jury investigation was the outcome of an invitation for bids for 1,000 pieces of tungsten carbide which was issued by the Frankfort Arsenal of the United States Army in 1940. Mr. L. Gerald Firth, president of the Firth-Sterling Steel Co., one of the controlled licensees of the patent pool, after preparing his bid in accordance with the specifications of his license agreement with the Carboloy Co., was sufficiently exercised by the apparent difference between the figure he would like to have quoted to the arsenal and the much greater figure which he was required by his license to quote, that he prepared for submission to officials of the Government a complaint, showing the comparison. According to the price specifications issued by Carboloy he was required to submit a bid in the amount of $8,730. In the light of cost figures applicable in his own factory, his independent determination was that at a total of $3,375 the Firth-Sterling Steel Co. would have received an adequate and reasonable profit on this order. This complaint disclosing these facts were orally submitted to the Antitrust Division of the Department of Justice after Mr. Firth learned that an investigation by the Department was contemplated. I introduce, however, as exhibit No. 3, a copy of a complaint of Mr. Firth, dated January 25, 1940, addressed to the Federal Trade Commission. I quote from that letter as follows:

"Our licensor is the Carboloy Company, Inc., of Detroit, Michigan, a subsidiary of the General Electric Company.

"These cemented carbide tools and dies are a most essential requirement of munition and mass-production manufacture. Our present costs show that we should be able to sell at far lower than the present prices. Large quantities of this material are now being manufactured in Germany, England, and France, many times the total production of the United States. This situation is, in our opinion, brought about by the unreasonably high prices at which we are compelled to sell and by the very unfair scale of discounts which make it difficult and in some cases impossible for the small user to use this material. In many cases these prices are from two to three times what we consider a reasonable price to smaller users. We do not complain of the net prices brought about by the large quantity discounts to large users, but we do complain that we are not allowed to extend a relative discount based on true costs to the smaller user.

"We trust that some action can be taken soon as we have no wish to be a party to anything which might be construed as an unfair trade practice."

Upon the return of the first indictment on August 30, 1940, in which, as I have said, these practices were charged to be violations of the Sherman Act, the carrying on of many of the practices disclosed was interrupted. Nevertheless, the complicated patent licensing system disclosed continues in effect and is ready at hand to be utilized again. Furthermore, documentary evidence shows that as late as December 1939, after the outbreak of the present war, the American companies were making plans to extend their agreement with Krupp until after 1950, a date which would be long after the date on which the most important patents involved would have expired. I introduce as exhibit No. 4 a letter from Peirce, foreign representative of General Electric in Germany, to Jeffries, chairman of the board of Carboloy Co., dated December 11, 1939. I quote from this letter as follows:

"Our friends at the Osram company informed me yesterday that Krupp would be interested in capitalizing the royalties now being received from Carboloy. In other words, they would like to sell us exclusive rights under these patents until 1943 with nonexclusive rights under the same patents thereafter. In this connec-

Digitized by Google

tion, Dr. Louis has asked for an appointment with me in Zurich, where we shall both be next week. They are quite anxious that the Krupp name be kept out of any correspondence, particularly telegrams, that might reach improper hands, and therefore I shall refer to them in the future either as the European licensors under Carboloy contract or simply as Dr. Louis.

* * * * * * *

"P. S.—Since writing the above I have received your message through Mr. Minor, also talked to Dr. Louis and Mr. Schurmann.

"They will now make us a proposition based on extending the contract to 1952 and our making a lump-sum payment for all hard metals—no matter what patents we use. I may get this next week and shall telegraph it to you at once."

In November 1937 Herod, of International General Electric, wrote to Baldwin, vice president of International General Electric, that the American companies wanted Krupp and a German concern in which the American companies were interested "to get together on some basis and would assure (*a*) to Krupp exclusive control of the situation in their domestic market, and (*b*) to the General Electric and Carboloy companies exclusive control in their domestic markets for such time" (i. e., until 1950 or 1954). I introduce a copy of this letter as exhibit No. 5.

The pool of patents upon which this whole structure was erected finally embraced more than 50 United States patents, contributed to a patent pool by various competing interests directly or indirectly by cross-licensing. The patents pooled were placed under the control of the General Electric Co. But General Electric is obligated to return to Krupp at the termination of the agreement all of the patents contributed to the pool by Krupp. This obligation remains unimpaired at the present time.

Cemented tungsten carbide has been produced abundantly in Germany, where it has been extensively used by German industry. Furthermore, German industry has enjoyed the use of this material at comparatively low prices. German manufacturers have sold approximately 12 times more of the metal than American manufacturers have sold in the same period for almost the same financial return. An exhibit disclosing this fact will be introduced later. I quote from an article in the issue of Fortune magazine for January 1942 as to the importance of this product in building the German military machine:

"How was impoverished Germany able to build her awesome war machine in * * * six short years * * *?

"The answers have been many * * * All the popular explanations have overlooked the possibility that a few hundred tons of phenomenal steel-cutting material called tungsten carbide may have been a decisive factor in the building of the arsenal of Hitlerism. Harder than sapphire and very nearly as hard as diamond, tungsten carbide was invented in Germany around 1915 and was taken over by the Krupp interests in 1916. Monstrous Big Bertha of World War I was tooled with tungsten carbide, and the new substance gave German industry a decided advantage over the Allies (who had developed nothing comparable) in armament production.

"Part of the magic of tungsten carbide is its hardness. Part is the fact that it has a melting point about 2,800° centigrade. These two properties make it so far superior to high-speed (tungsten alloy) steel as a cutting edge for machine tools that there is hardly a basis for comparison. In many machining operations substitution of tungsten carbide for high-speed steel multiplies the rate of production at least 500 percent. And Germany retained unquestioned leadership in the use of tungsten carbide after the Armistice, even though Krupp licensed other producers throughout the world. Britain, France, and the U. S. were sluggish about retooling, and it is estimated that in 1938 Germany had twenty times as much tungsten carbide in use as in the U. S. This—according to many experts—is one of the great secrets of German rearmament. These experts also think that without tungsten carbide it would have taken the Reich twice as long to achieve half the results. Furthermore, fragments of shells picked up on various battlefields indicate that Germany is using tungsten carbide for projectile tips and even may have developed a superior lightweight armor plate consisting of thin layers of carbide and steel."

In contrast with the situation in Germany, the present drastic shortage of this essential material in this country is notorious. The need to produce it, to retool our manufacturing plants with it, and to instruct workmen in the use of such tools has constituted one of the principal bottlenecks in our present production program. I quote from exhibit No. 6, an affidavit of Robbins, president of

Digitized by Google

Carboloy Co., dated July 14, 1941, submitted to the District Court of the United States for the Southern District of New York:

"3. The Carboloy Co. is the largest manufacturer of cemented carbides in the United States. In the past it has manufactured about 60% of the total U. S. production and I estimate that it is now manufacturing a larger proportion. Since 1939 defense requirements for cemented carbide tools and dies have resulted in tremendous demand upon the company for increased production. Whereas in 1938 Carboloy Co. manufactured 3,176 kilograms of cemented carbide metal and powders during the entire year, the company is now manufacturing at the rate of 10,000 kilograms per month, an increase of 1,200%. Nevertheless the company's unfilled orders have increased, and defense demands for immediate delivery become more imperative. To eliminate shortages for defense purposes, Carboloy Co. is erecting an addition to its factory and, with its completion in December 1941, expects to be producing prepared powders and metal at the rate of 30,000 kilograms per month."

The activities which these documents reveal are considered by the Department of Justice directly responsible for the disadvantage at which this country finds itself in comparison with its enemies in the use of tungsten carbide and other hard-metal compositions and in the rate of production which the use of such hard-metal compositions in machine tools makes possible.

QUESTIONS OF LAW ILLUSTRATED

The pending indictments raise, among others, the following legal questions under the antitrust laws:

(*a*) May competitors pool patents (patents which may be competing patents) in order to obtain monopolistic control over a product indispensable to American industry, divide up the world markets between them, eliminate imports and exports to and from this country, restrict the number of producers in the United States, to a very few, limit the volume of such material produced, sold, and used in the United States to a figure insignificant compared to its availability in Germany, and establish uniform prohibitive prices for the product, and the unpatented tools containing the product, in both sales and resales?

(*b*) May such patent pool and its incidents and effects be permitted to destroy potential competition by being used as an instrumentality to coerce other competitors to come into the combination by threat of infringement suits never brought to trial, thus preventing any impartial test of the validity of the patents—especially when the patents were always of doubtful legal validity and were subsequently actually declared to be invalid when a test was finally had?

(*c*) May certain parties to such a combination seize the opportunity afforded by the terms of the patent pool agreement to fix prohibitive and discriminatory prices and to engage in other practices unfair to the other parties for the purpose and with the effect of eliminating even such limited competition and sources of supply permitted to exist by the terms of the original patent pool agreement?

(*d*) May the parties to such a patent-pooling combination, or indeed any patent owner, employ the limited monopoly conferred by the patent grant to prescribe and enforce resale prices to be observed by outright purchasers simply because the parties denominate them "agents" rather than "purchasers" and, in particular, whether such resale prices may be prescribed and maintained for the sale of unpatented materials consisting of steel shanks, etc., in a completed tool which contains as one of its parts a cutting edge manufactured from the patented product?

But even if the negative of these legal propositions is the law today, it must be obvious that they do not fully protect against the results of the activities which the evidence will disclose. It must be obvious that the antitrust laws, in the main, act only after the fact. It will be noted that the activities which were made the subject matter of these indictments were engaged in during the period from 1928 to 1940. Yet, notwithstanding vigorous prosecutions of the antitrust laws since 1935, they were not even discovered by, or made known to, the Government until the year 1940, after the basis had been laid for the damage the public is now sustaining. Furthermore, an indictment obtained in 1940 is still pending and awaiting trial. Accordingly, the circumstances about to be related may suggest to the committee the need for other provisions of law—provisions which, had they been in effect during the period in which these activities were engaged in, might have prevented them. Without necessarily recommending the adoption of any of them and recognizing that there may be countervailing considerations against their

Digitized by Google

adoption, I may say that some or all of the following suggested provisions of law, if they had been the law, might have prevented these practices in their incipiency:

(1) More stringent requirements for the obtaining of patents to prevent as far as possible the issuance of patents which will be declared invalid when tested in the courts.

(2) Clearly empowering and authorizing a governmental agency in ordinary course to call in question any patent, and to obtain a determination as to its validity and scope. This would negative a view somewhat commonly held that under existing law patents can be tested only at the election of the patent owner in a private infringement suit, unless there appears to be fraud in the obtaining of a patent, or its use to accomplish a restraint of trade.

(3) Prohibitions against pooling patents or cross-licensing under them except to avoid bona fide patent deadlocks.

(4) Complete or qualified compulsory licensing under all patents in return for reasonable royalties.

(5) Prohibitions against restrictions in licenses as to price, territory, and use.

(6) Requirements that all agreements involving patent rights be publicly registered.

(7) Measures to prevent the use of infringement proceedings to coerce persons to recognize patents.

(8) Provisions against the use of the *del credere* agency systems to maintain resale prices.

(9) Specific prohibitions against restricting the sale or use of unpatented articles composed in part of patented material.

(10) Increased penalties for engaging in restraints of trade under color of patent rights, to constitute an effective deterrent against such practices.

THE FACTS

Certain facts which the documents will disclose are as follows:

Cemented tungsten carbide was invented long ago and has been known to the art for many years. Its development as a satisfactory metal-cutting agency came in the 1920's. For a period of about a year and a half prior to November 5, 1928, American industries had a number of sources of supply of tungsten carbide and tools and dies containing this hard-metal composition. Among these sources were the Krupp Co. of Essen, Germany, and two American concerns to which Krupp was then shipping and selling outright, namely, the Union Wire Die Corporation and Thomas Prosser & Son, a partnership. Furthermore, Krupp had at that time obligated itself to grant licenses under United States patents which it claimed to own to a number of other large American concerns to manufacture and sell the product in the United States. It had in this way obligated itself to grant licenses to the Firth-Sterling Steel Co. and to the Ludlum Steel Co. During this period of a year and a half prior to November 5, 1928, tungsten carbide for use in tools and dies was being sold in the United States to consumers at about $50 a pound, a price which the General Electric Co. itself regarded as "high" even when initial development costs were contemplated.

The principal United States patents which Krupp claimed to own by virtue of an assignment from a German electric-light company, known as Osram Kommanditgesellschaft, were patents covering the supposed inventions of Baumhauer, Schroter, and Strauss. Copies of these patents will be introduced later as one exhibit No. 7. These United States patents had been previously assigned by the Osram Co. of Germany to General Electric for use in the manufacture of electric lamps. General Electric acknowledged that Krupp was entitled to these patents for all other uses. But General Electric had also developed some patents of its own, principally the Hoyt and Gilson patents, covering competing processes for the manufacture of cemented tungsten carbide. Copies of these General Electric patents will be introduced later as one exhibit No. 8. The documents will reveal that certain employees of General Electric then believed that General Electric could utilize these patents independently without infringing the competing patents claimed by Krupp. However, instead of using its patents independently in competition with Krupp, or, instead of testing out its right under the patent laws to utilize its own patents independently, General Electric worked out with Krupp during the year 1928 a cartel agreement to pool in the hands of General Electric all of the present and future patents of both parties relating to this product and to confer upon General Electric a large measure of control over the exploitation, in the United States, of all the products to which these patents related, including the power to determine sale and resales prices to be observed by itself and any companies to which it should

Digitized by Google

grant licenses and to be observed in the United States by Krupp and Krupp's licensees and dealers. This agreement of November 5, 1928, contemplated, however, that American industry should continue to enjoy at least six separate and competitive sources of supply, namely, General Electric, Krupp, Union Wire Die Corporation, Thomas Prosser & Son, Firth-Sterling Steel Co., and Ludlum Steel Co.

Nevertheless, as I have said, in the cartel agreement was a provision that all prices to the United States consumers would be fixed and made uniform and would be determined by the fiat of General Electric. It is true that the parties had in mind at that time the figure of only about $50 a pound, the market price then prevailing in the United States, as the price to be fixed by General Electric under the cartel agreement. But General Electric's and its subsidiary Carboloy's exercise of this power to fix prices one by one eliminated, or placed under strict control, these other sources of supply and brought about for General Electric and Carboloy a monopolistic control and dominance over practically the entire industry devoted to the manufacture of hard-metal compositions (tungsten, carbide, tantalum carbide, and titanium carbide) and even the unpatented tools and dies which contained parts fabricated from such hard-metal compositions.

The first step in this program was taken by Carboloy Co., Inc., a General Electric subsidiary, incorporated for the purpose of exploiting this business. Instead of prescribing the high price previously contemplated by the parties, namely a price of around $50 a pound, Carboloy fixed a price of $453 a pound, a figure about 1½ times the value of a pound of gold. The requirement that such price be observed was imposed upon Carboloy, upon the Krupp Co., and its American outlet, Thomas Prosser & Son, and also upon the Firth-Sterling Steel Co. and the Ludlum Steel Co. to which Carboloy had been obliged to grant sublicenses under the patents because of Krupp's antecedent obligation to these companies to permit them to utilize Krupp patents. General Electric contended that Krupp was obligated to impose these prices prescribed by Carboloy not only upon sales made by its future American dealers, but also upon the sales to consumers in the United States of concerns like Thomas Prosser & Son and the Union Wire Die Corporation, to which Krupp had for sometime been selling outright for resale. Union Wire Die Corporation held a contract with Krupp entered into before the pooling agreement between Krupp and General Electric had been executed whereby Union Wire Die Corporation claimed a vested right for a term of years to purchase the tungsten carbide from Krupp and to resell it in the United States free of price control and to utilize the patents claimed by Krupp in such resales of tungsten carbide in this country. Krupp was able to modify its arrangement with Thomas Prosser & Son and to make Prosser thereafter observe the prices fixed by Carboloy. Krupp claimed to lack the ability to alter the preexisting contract with Union Wire Die Corporation—and, therefore, since Krupp refused to change this contract, Carboloy proceeded to enter into additional collateral price-fixing agreements with the Union Wire Die Corporation whereby that concern became from time to time obligated to Carboloy to observe the prices promulgated by the Carboloy Co.

The indictment charges that the purpose of General Electric and Carboloy in prescribing these prohibitive prices, and the purpose of other similar restrictive activities, was to make the American market for a time so restricted in scope and so unattractive to all sources of supply, that these sources other than General Electric and Carboloy would, in time, consent to be eliminated altogether, leaving the field completely to General Electric's and Carboloy's exploitation.

These activities had that effect. No one could sell any great amounts of this material at such prices no matter how good it was and no matter how much American industry might need it. As early as 1934 General Electric and Carboloy were able, by purchase, to obtain the surrender of the license which had been granted to the Ludlum Steel Co., thereby eliminating that competitor No. 1. A similar attempt was made to induce competitor No. 2, the Firth-Sterling Steel Co., to surrender its manufacturing rights or be placed under a production quota restriction.

In the year 1936, Krupp, competitor No. 3, was induced to return for consideration, including large financial payments, to agree to refrain altogether from further importation into the United States. Krupp was permitted, however, to retain a veto power over which American concerns should thereafter be permitted to engage in the manufacture and sale of the product here.

Part of the consideration for the elimination from the American market of tungsten carbide manufactured abroad was a reciprocal undertaking that General Electric and Carboloy would not export from this country. Thus these American

Digitized by Google

companies, by contract, tied their own hands, or permitted the Germans to tie their hands, and denied foreign markets to American industry.

Carboloy Co. then acquired by purchase the businesses of competitors Nos. 4 and 5. First it bought up the business of Thomas Prosser & Son for a price ranging from $175,000 to $300,000, taking a covenant from that company to refrain thereafter from competition. In 1937, for a consideration of nearly a million dollars, Carboloy acquired the competing business of the Union Wire Die Corporation and put the principal and principal owner of that company on the pay roll of Carboloy in order to eliminate all competition from that source. Krupp cooperated with General Electric and Carboloy to induce Union Wire Die Corporation to sell out. At the instance of General Electric, Krupp then began restricting its sales to Union Wire Die Corporation and on the material it did then sell Union Wire Die Corporation it increased its price. Caught in the squeeze, Union Wire Die Corporation agreed to sell out, and its owner and president accepted an advisory job from Carboloy at $5,000 a year and covenanted to stay out of the business. As the result of these tactics General Electric and Carboloy emerged in 1936 or 1937 with virtually a complete monopoly. Then in 1936, and only then, did Carboloy reduce the fixed prices substantially. Previous reductions in price had been comparatively insignificant.

Resale prices and prices of unpatented tools were also maintained

In addition to fixing and maintaining horizontal prices for the tungsten carbide, Carboloy fixed and maintained vertical resale prices as well. This was done by requiring that established tool makers who used tungsten carbide as parts of their tools must do so only under contracts which purported to make them "agents" of the suppliers of the tungsten carbide. The provisions of such so-called agency contracts were largely ignored in practice, and it is charged that such contracts were colorable only and that the tool makers were in fact purchasing tungsten carbide outright but reselling it at fixed resale prices. The prices of the unpatented finished tools, simply because they contained parts fabricated from tungsten carbide, were likewise fixed in the same way.

The division of world territory with other German interests

In 1927 General Electric Co. and its wholly owned subsidiary, the International General Electric Co. which does all of General Electric's foreign business, entered into an agreement with another German corporation, the Allgemeine Elektricitaets Gesellschaft, whereby hard-metal compositions and tools and dies containing such compositions were included in and made subject to a subsisting agreement between General Electric, International General Electric, and Allgemeine Elektricitaets Gesellschaft, dated January 2, 1922. Thereafter, as late as October 1938, these companies supplemented, modified, and extended this agreement to run until December 31, 1955. By this agreement General Electric, International General Electric, and Carboloy obligated themselves and their controlled companies to this German concern to refrain throughout the period from 1927 to 1956 from engaging, directly or indirectly, in the manufacture or sale of all products of General Electric, patented or unpatented, in Germany (including former Austria), Danzig, and Memel, as those countries should exist from time to time. All of these countries were agreed to be within the exclusive territory of Allgemeine Elektricitaets Gesellschaft.

Allgemeine Elektricitaets Gesellschaft, in turn, obligated itself and its controlled companies to refrain from engaging, directly or indirectly, in the manufacture or sale of such products in the United States or any of its Territories, dependencies, and possessions. These agreements further expressly restricted the parties in their manufacture and sale of hard-metal compositions throughout the rest of the world. I introduce these agreements as Exhibit No. 9.

NATURE OF TUNGSTEN CARBIDE

Tungsten carbide, next to the diamond and possibly boron carbide, is said to be the hardest substance yet known to man. Pure tungsten carbide itself, however, has never been successfully used except in combination with other metals because of the fact that, although it is extremely hard, it is also very brittle and is not suitable for the manufacture of articles requiring strength and resistance to shock. Hard-metal composition of tungsten carbide used today is cemented tungsten carbide. It consists of numberless minute particles of tungsten carbide

Digitized by Google

surrounded and cemented together by a softer and tougher "binder metal," such as iron, cobalt, or nickel. A material which is said to have an appearance resembling that of cemented tungsten carbide greatly magnified is the common type of flooring material known as terrazzo. The small granite chips in such flooring material correspond to the tungsten carbide particles and the surrounding mortar corresponds to the binder metal.

The above description, however, is grossly oversimplified. There are other phenomena involved in addition to the mere cementing together of tungsten carbide particles. Even today science apparently has not discovered the entire truth concerning the physical and chemical reactions which take place when these metals are heated after having been reduced to powder form. The problems involved are extremely interesting from a technical point of view, but since this is a legal and not a scientific inquiry, I pass on to the importance of the material.

Tungsten carbide is of great industrial importance

As early as April 15, 1930, a survey was made of successful applications of tungsten carbide within the various departments of General Electric. A compilation of the data thus obtained was collected on that date. I introduce this study as exhibit No. 10. It shows that in 1929 the Schenectady works of General Electric had placed in operation approximately 10,000 carbide tools at a cost of about $5 per unit and that the resultant saving had been estimated to be about $10 per tool, or at the rate of $2 for every dollar invested in such tools. It was also reported that in the Schenectady works tungsten carbide had been used successfully in many applications involving the cutting of steel. It was reported by the Lynn River Works of General Electric that 15 of the tungsten carbide applications at that plant had been time studied, showing an annual direct labor saving of $5,200 on the 15 applications. The engineer in charge of this works predicted that when 1,000 of the machines in this plant had been equipped with tungsten carbide tools, a 10 percent direct labor saving would result, effecting an economy in the amount of $136,500 per year.

On October 29, 1931, Jeffries, then president of the Carboloy Co., prepared a comprehensive study of the past history and the future possibility of tungsten carbide. I introduce this letter as exhibit No. 11. The following excerpts from this document are of interest here:

"In estimating future possibilities three years ago, the current consumption of Carboloy tools by General Electric Company plants was used as a guide. It may be assumed that the General Electric Company does approximately one one-hundred and fiftieth of the business of the United States. If we multiply by 150 the number of pounds of Carboloy used each year by the General Electric Company, exclusive of the Incandescent Lamp Department, the amount of Carboloy consumption would be so great as to make the problem one of production rather than one of sales.

* * * * * * *

"At first thought, one might consider that the Incandescent Lamp Department of General Electric Company would not be a particularly advantageous place for large utilization of Carboloy * * * It may be of interest, therefore, to consider the consumption of Carboloy in the Incandescent Lamp Department during the first nine months of 1931. This period will be recognized as one of a low state of activity. During this period 3,469 pieces were used, totaling 45.88 kilograms. This is just about one hundred pounds, or at the rate of one hundred and thirty-three pounds per annum, or eleven pounds monthly. In tool and die form, as Carboloy is mostly sold, this amount would sell to the outside trade for about $4,000 per month. The Incandescent Lamp Department does about one one-thousandth of the total business of the United States, and consequently the $4,000 per month consumption of Carboloy by that Department, if translated to industry as a whole, would indicate a demand of $4,000,000 per month—assuming that all industry could use Carboloy in the same proportion as the Incandescent Lamp Department."

For purposes of comparison it may be noted that the total gross volume of business done by the Carboloy Co. in 1931 amounted only to $631,594.

At a meeting of the Carboloy executives on June 28, 1938, Jeffries, then chairman of the board of Carboloy, reported that "on one shell turning job the cutting time was reduced to one-sixtieth by Carboloy suppliers and this gave the incentive for every one to continue to work." The minutes recording this statement will be introduced later. In referring to "shell turning jobs" Jeffries was

Digitized by Google

speaking of the operation in which the steel projectiles for military and naval artillery shells are machined to the proper size and shape from the rough forging which represents the initial stage in the manufacture of such projectiles. This is a particularly difficult machine operation in view of the fact that large quantities of metal must often be removed from the rough forging and because such projectiles are manufactured from extremely hard metal. The affidavit which was submitted to the District Court of the Southern District of New York on July 14, 1941, by Robbins, president of Carboloy, and which I have already introduced as exhibit No. 6, contains the following:

"Cemented tungsten carbide is important in defense industries because it is so much harder and wear-resistant than high-speed steel that it will perform most cutting operations at four times the speed of high-speed steel. A tool tipped with cemented carbide will retain its sharpness many times longer than a tool of high-speed steel. Thus a carbide tool further increases production by conservation of time lost in removing, sharpening and resetting a tool in the machine. When cemented carbide tools are used in a plant the productive capacity of the machines tooled with these tools is increased by 15 to 25% above its capacity with the use of high-speed steel tools."

In a letter to the office of the Chief of Ordnance of the United States Army, dated December 21, 1939, Robbins stated that the production from many machine tools in the United States could be increased as much as 50 percent merely by changing from the ordinary cutting tools to tools employing tungsten carbide. I introduce this letter as exhibit 12.

The use of tungsten in tungsten carbide conserves the metal, tungsten, which is scarce

In a letter to the Assistant Secretary of War, dated October 9, 1939, Jeffries, chairman of the board of Carboloy, stated that a pound of tungsten would go further in industrial production in the form of cemented carbide than in the form of high-speed steel or stellite. He said that the extent of this superiority in some cases is at least 100 to 1. I introduce this letter as exhibit No. 13. A similar representation was made by Robbins, president of Carboloy, on December 21, 1939, in his letter to the office of the Chief of Ordnance of the United States Army which has just been introduced as exhibit No. 12.

The affidavit submitted by Robbins to the District Court for the Southern District of New York on July 14, 1941, introduced as exhibit 6, also contains the following:

"Tungsten, a vital war material, is utilized far more efficiently in tungsten carbide than in high-speed steel. It has been estimated that a pound of tungsten used in tungsten carbide for cutting tools can produce from 20 to 50 times as much production as a pound of tungsten used in high-speed steel."

These facts are important when the necessity of conserving the metal, tungsten, is appreciated. The President has issued an Executive order forbidding the export from the United States except upon license issued by the Secretary of State. I introduce this as exhibit No. 14, Executive order from 5 Federal Register, p. 2469, July 4, 1940.

Cemented tungsten carbide has long been known to the art

The substance, tungsten carbide, has been generally known to the science of metallurgy since approximately 1898 when a Frenchman named Moissan published a book describing his experiments with tungsten carbide and the properties of this composition. Before many years had passed, numerous attempts had been made to utilize in practical form the quality of extreme hardness which characterized this unusual material. Most of the early attempts were marked by attempts to mix tungsten carbide with other metals in such a way as to preserve the hardness of the tungsten carbide and yet obtain a substance which was tough and durable. Many such practical materials were made and patented before 1920. An example of this type of product is that patented by Coles and Donaldson. This product was formed by melting tungsten carbide and nickel and casting the same in the form of sheets. This substance was successfully used in the manufacture of burglarproof safe doors for a considerable number of years.

The difficulty with the cast products lay in the fault of all cast materials, namely, that although quite hard they were also too brittle to be used for many purposes where strength and resistance to shock were necessary. The next group of such products which were developed, therefore, embodied attempts to

Digitized by Google

obviate the necessity of melting and casting the product. In 1914 and 1916 two patents were issued in Germany to Voigtlander and Lohmann on several different materials, among which was a composition of tungsten carbide and a more ductile metal manufactured by a process which is sometimes described as sintering. One of these patents contains the interesting observation that it was already old in the art to add metal substances to hard carbides to be used as a binder. In 1920 an American patent was granted to Liebman and Laise on materials similar to those described by Voigtlander and Lohmann but superior thereto because of an improved technique and a formula calling for a larger amount of the binder metal.

The patent pool here involved did not contain or rest upon these patents. They are mentioned here as bearing upon the validity of the patents which were pooled. I shall introduce later copies of these early patents, to Coles and Donaldson, to Voigtlander and Lohmann and to Liebman and Laise, as one exhibit No. 15.

In 1924 a United States patent was granted to Baumhauer on a superior technique which utilized substantially the same materials as those disclosed by Liebman and Laise and Voigtlander and Lohmann, and in 1925 a United States patent was granted to Schroter on a material which was also similar to that covered by earlier inventions but which represented an improvement on the prior art by reason of its specification of the proportions of the different ingredients to be used and other details of the sintering operation.

But up until about 1927 no commercially successful product had been developed and it was only in about the year 1927 that mechanical skill and practical knowledge had reached a point where it was possible to utilize in the production of a commercially successful product this long series of disclosures and developments in the art. These improvements, which represented the difference between laboratory and factory processes were nevertheless merely improvements in mechanical skill in handling the ingredients. These mechanical improvements related to techniques in grinding or pulverizing the ingredients to be used and in the determination of the most suitable proportions of materials and the optimum figures of time and temperature used in the final heating process.

The pooled patents, including the Schroter patent, therefore, added nothing of patentable novelty to the art. They were bound to be held invalid as soon as they should be tested in court. The aforesaid evolution of the mechanical application of the substance was expertly and authoritatively discussed by the District Court of the United States for the Eastern District of Michigan which in 1940 held invalid six of the so-called basic patents upon which the patent pool was constructed. This was the first case involving a test of the pooled patents which had been permitted to come to trial. District Judge Tuttle in that case stated that the history of the art showed that at no single point had a "revolution" taken place which gave to science and the public any substantial novel development, and he described the process which had taken place as merely one of technological "evolution." It was upon this premise that he held, as one of the reasons for invalidating all the patents in suit, that those patents did not disclose enough of novelty to the public to justify the public in granting any exclusive "franchise" in return. He added that whatever contributions were represented by the pooled patents consisted only in the treatment of well-known combinations of materials by metallurgical processes which were equally well-known. It is important to note, therefore, that while it has been the legal contention of the Department of Justice that the activities under this cartel agreement were violative of the Sherman Act even upon the assumption that all of the patents pooled were valid, the principal patents supporting this structure were in 1940 held by a United States District Court to have been at all times null and void, because lacking in patentable invention. Judge Tuttle's opinion was rendered in the case entitled *General Electric Company et al* v. *Industrial Diamond Co., et al.* (33 F. Supp. 969). From this decision the owners of the patents took no appeal.

Initial formation of the patent pool by the agreement between Krupp and General Electric dated November 5, 1928

Krupp's letter to General Electric, dated September 13, 1927, embodies perhaps the earliest proposals which were made between the parties for a patent pooling agreement. In this letter Krupp stated that it was prepared to grant a manu-

Digitized by Google

facturing license to General Electric under the patents Krupp had obtained from Osram on the following terms:

(*a*) that Krupp be allowed to sell in the United States;

(*b*) that there be an exchange of patents and technical information;

(*c*) that a royalty of one-third of General Electric's net proceeds be paid to Krupp;

(*d*) that Krupp have the right to grant other manufacturing licenses if General Electric's sales did not reach a certain amount by a stipulated time;

(*e*) that prices be agreed upon.

I introduce this letter as exhibit No. 16.

On April 17, 1928, a meeting was held between certain representatives of General Electric and Krupp in which a draft of tentative agreement between the two companies was prepared. In this draft it was recited that "the patents now owned by Krupp and by the General Electric Co. should be combined and the entire situation should be turned over to the General Electric Co. for handling in the United States." The procedure was then briefly outlined with respect to the licenses to be granted, the royalties to be paid, and the manner in which the technical information was to be exchanged. Provision was made for importation by Krupp into the United States until the end of 1930 or until royalties paid Krupp should reach a stipulated figure. I introduced this tentative agreement as exhibit No. 17.

Krupp's reaction to the draft of agreement prepared on April 17, 1928, is shown in its letter to General Electric, dated June 14, 1928. Although an agreement on the principles was expressed, numerous suggestions regarding changes were proposed as follows: (1) That Krupp be permitted to sell in the United States for an unlimited period, and (2) that a price-fixing provision be incorporated in spite of General Electric's reluctance based upon the antitrust laws. I introduce this letter as exhibit No. 18. A letter from Stearns of General Electric to Preussing of Krupp, dated October 3, 1928, states in detail several reasons why Krupp should not plan to import hard metal composition into the United States. I introduce this letter as exhibit No. 19.

On November 5, 1928, General Electric and Krupp entered into a written agreement which I introduce as exhibit No. 20. This agreement purported to take effect on April 17, 1928, and to run for a term of 15 years from the date thereof, and thereafter until terminated by 6 months' notice in writing by either party to the other. By this agreement all of Krupp's alleged rights under certain United States letters patent and patent applications and all other United States letters patent relating to hard metal composition which would be owned or controlled by Krupp at any time during the life of the agreement, and certain applications for United States letters patent belonging to General Electric and all other United States letters patent relating to hard metal composiions which should be owned or controlled by General Electric at any time during the life of said agreement or pooled in the hands of General Electric. The said agreement imposed upon the parties entering into it the following restrictions and obligations, among others:

(1) General Electric was obligated to prescribe and fix the prices and terms and conditions of sale under which all such hard metal compositions and hard-metal composition products could be sold and resold in the United States.

(2) General Electric was obligated to arrange for the exploitation in the United States of such hard metal composition of a performing quality comparable to the hard metal compositions then being manfactured by Krupp, by granting nonexclusive licenses to manufacture, use, and sell hard metal compositions and products containing such hard metal compositions under the alleged patent rights included in or to come into said patent pool to a number of manufacturers in the United States, including Ludlum Steel Co., and Firth-Sterling Steel Co.

(3) General Electric was obligated to pay to Krupp certain specified money, the amount of which was to be determined by the amount of all such hard metal compositions sold by it or any of its licensees.

(4) Krupp was obligated to refrain from manufacturing any such hard metal compositions or hard metal-composition products in the United States.

(5) Krupp agreed that hard metal compositions and hard-metal composition products of its manufacture which should be imported into the United States would be resold in the United States at prices and on terms and conditions of sale determined and prescribed by General Electric, and that it would require Gewerkschaft Wallram, in turn, to require the dealers and distributors of

Digitized by Google

Gewerkschaft Wallram in the United States to observe and adhere to such prices and terms and conditions of sale in their resales of such dies within the United States; Krupp was also obligated to make contracts with all of its importers (dealers and distributors, including tool makers and die makers) located in the United States to which it should sell outright and such hard-metal compositions and hard-metal composition products, in form satisfactory to General Electric, requiring such importers in turn, to observe and adhere to such prices and terms and conditions of sale in any resales which said importers should make of such hard metal compositions and hard-metal composition products, and in any sales of tools and dies embodying hard metal compositions manufactured by said importers.

(6 Both General Electric and Krupp were obligated to pool technical information relating to hard-metal compositions and hard-metal composition products, and to cause their respective employees to disclose to them any inventions which said employees might make relating to such hard-metal compositions and to assign said inventions to General Electric and Krupp, respectively, and any United States rights to such inventions would thereupon be included in said patent pool.

In the same year, 1928, General Electric caused its subsidiary, Carboloy, to be incorporated, and Carboloy undertook to carry out the obligations of General Electric under General Electric's pooling agreement with Krupp.

1936 amendment to the pooling agreement

On April 23, 1936, General Electric and Carboloy entered into a written agreement with Krupp which I introduce as exhibit 21, amending the pooling agreement of November 5, 1928, whereby, in return for increased payments of money, Krupp agreed from and after said date to refrain from selling or shipping tungsten carbide tools containing the same to or for sale in the United States, and from and after July 7, 1937, to refrain from selling or shipping nibs fabricated from tungsten carbide and dies containing such nibs to Union Wire Die Corporation and whereby General Electric and Carboloy agreed to refrain thereafter from exporting any hard-metal compositions and products from the United States to persons located in foreign countries. General Electric and Carboloy agreed not to license or permit any other person to manufacture or sell such hard-metal compositions and hard-metal composition products in the United States without the approval of Krupp. On or about April 23, 1936, General Electric and Carboloy agreed with Krupp that Carboloy would purchase from Union Wire Die Corporation and from Thomas Prosser & Son their respective businesses.

Carboloy granted licenses only to companies which Krupp was already obligated to license and to three alleged infringers of the pooled patents

Firth-Sterling Steel Co. and the Ludlum Steel Co. were issued licenses by Carboloy in January 1929.

It appears that during the period preceding the pooling agreement between Krupp and General Electric that Krupp had obligated itself to grant licenses to these companies. The letter of Stearns, manager of special contracts of General Electric, to Swope, president of General Electric, August 3, 1928, contains the following:

"Before making a trade with the General Electric Krupp had committed itself to granting licenses in the United States for the manufacture and sale of carboloy, to the following firms: Ludlum Steel Company; Firth-Sterling Steel Company; * * *."

I introduce this letter as exhibit No. 22.

The obligation of General Electric to Krupp to grant licenses to Firth and Ludlum was expressly recited in article IV of the General Electric-Krupp agreement of November 5, 1928, already introduced as exhibit No. 20, as follows:

"THE GENERAL COMPANY agrees to arrange for the diligent exploitation in the United States for hard-metal composition as herein defined, of a quality comparable to the hard-metal composition now being manufactured by the KRUPP COMPANY in Germany in the form of tools and dies or parts thereof. This shall be done either by granting nonexclusive licenses to manufacture, use, and sell under patent rights within the scope of this agreement to a reasonable number of reputable manufacturers in the United States, including

Digitized by Google

Ludlum Steel Company and Firth-Sterling Company, or in such manner as shall be agreed upon by the parties hereto.

The license agreements to the Firth and Ludlum Companies, which were dated January 2, 1929, and January 16, 1929, respectively, are typical cross-licensing agreements involving the reciprocal grants of patent rights, royalty payments, reports by each party, exchange of technical information, admissions of validity of patents and cancellation and arbitration provisions. It is noteworthy, however, that it is provided in article VI of these agreements that the licensee is required to adhere to the prices and terms and condititions of sale to be promulgated from time to time by Carboloy. I introduce a copy of the license to Firth-Sterling Co. as exhibit No. 23.

As has been stated, General Electric and Carboloy claimed that other manufacturers not in the combine were "infringers" of the pooled patents and by the threat or institution of numerous patent suits drove some of them from the field. But no infringement suits were permitted to be brought to trial during the period 1927 to 1940. Instead where threats failed to eliminate three such manufacturers, all price competition from these three alleged "infringers" was eliminated, and other competition offered by them substantially hamstrung, by bringing them into the combination through the simple expedient of giving them restrictive licenses. These manufacturers were granted sublicenses by the Carboloy Co. under the pooled patents whereby (*a*) the pool was augmented by the acquisition of rights under the patents owned by the alleged "infringers," and (*b*) the sublicensees, and their products which would have competed with tungsten carbide such as tantalum carbide and titanium carbide, were placed under the strict control as to prices and production quotas prescribed by Carboloy.

For example, American Cutting Alloys Co. and American Electro Metal Co., having first begun to manufacture Cutanit, a material consisting of titanium carbide, under their own patents, were brought under control by receiving in 1933 a license from Carboloy under the pooled patents wherein their manufacture was restricted to titanium carbide and their prices made to conform. The negotiations which preceded the issuance of this license agreement were opened by a letter from Oppenheimer, patent attorney for American, to Carboloy, dated August 20, 1932, which I introduce as exhibit No. 24. This letter is noteworthy in that it alleges that Carboloy's pooled patents were "not to be upheld in court over the prior art" known to the American group. A letter from Mallory, president of Carboloy, to Jefferies, dated August 23, 1932, urges that some arrangement be made to assure control over the new product being introduced by this American group. The following paragraph from this letter, which I introduce as exhibit No. 25, is interesting:

"While the chances are that this material will not prove as significant as a cure-all for all cutting problems, nevertheless I am pretty thoroughly convinced that the tests that they do make and the discussions that they will have during their trip with various interests who are anxious to break down the Carboloy picture will make it more difficult for you to deal with them later than it will be at this time. Take the case of Fansteel for instance. Fansteel has everything to gain and nothing to lose by tying up with them. Fansteel's patent attorney will unquestionably tell them that the Carboloy patents are not broad enough to cover this development. Fansteel can make them all kinds of promises and I am sure will do so."

Jeffries, president of Carboloy, wrote to Stearns, of General Electric, on September 27, 1932, with reference to his conversation with Mr. Firth on this subject, as follows:

"He [Firth] was told, of course, that our first objective would be to bring the Cutanit material under price control and into the patent picture in such a manner that it could be manufactured by the licensees. Naturally, we told him that the licensees could proceed at once to manufacture and sell the material because it comes under claims of patents under which they are already licensed."

Jeffries' letter to Templeton, of Ludlum Steel, October 7, 1932, contains the following:

"I stated that our first objective would be to try to secure the complete patent rights on Cutanit provided, of course, the material looks sufficiently interesting and provided that suitable terms can be arranged. * * *

"Our second objective, if we cannot obtain the first, would be to put Cutanit under price control. * * *"

These letters are introduced as exhibits No. 26 and No. 27.

Digitized by Google

Accordingly, on April 20, 1933, an agreement was entered into between Carboloy, the American Electro Metal Corporation, and the American Cutting Alloys, Inc. This license agreement is similar to that granted to Ludlum and Firth with the exception that it is limited in its scope to compositions containing at least 16 percent by weight of any one or any combination of the following metals: Titanium, vanadium, zirconium, boron, or silicon. I introduce it as exhibit No. 28.

Companies composing the so-called Fansteel group, having first begun to manufacture tantalum carbide under their own patents were brought under control by receiving a license from Carboloy under the pooled patents wherein their manufacture was restricted to tantalum carbide and their prices made uniform.

About in 1931, the General Motors Corporation obtained a preferential contract for the purchase of tungsten carbide from the Firth-Sterling Steel Co. After the cancelation of this contract was required by Carboloy, General Motors began to buy a new tantalum carbide called Ramet from the Fansteel group of companies. The letter of Jeffries, president of Carboloy, to Swope, president of General Electrict, August 2, 1932, contains the following:

"You will be interested to know that the General Motors-Firth Sterling contract was cancelled according to schedule on June 30. * * * Apparently the Divisions were glad to see this agency cancelled. On the other hand, the General Motors Research Corporation is not pleased with this action, and we have heard rumors that they will manufacture and sell tools made of Ramet, an infringing material made by Fansteel Products Corporation, against whom we have filed a suit."

I introduce this letter as exhibit No. 29. Thereafter, on August 8, 1933, an agreement was made between General Electric and Carboloy on the one hand and the Fansteel Products Co., Inc., the Ramet Corporation of America, and the Vanadium Alloys Steel Co. on the other, under which the latter group was licensed to make certain hard metal compositions under the pooled patents. This cross-licensing agreement is somewhat similar to the preceding licenses granted by Carboloy in that it is a cross-licensing arrangement involving royalties, reports, price-fixing, etc. However, it is noteworthy in that the agreement permits the manufacture of only that hard metal composition which contains at least 17 percent by weight of tantalum carbide or the molecular equivalent in columbium carbide or a combination of the two.

The only other license granted by Carboloy was one to the Eisler Electric Co. in 1934. A letter of Jeffries, president of Carboloy, to Stearns, of General Electric, August 8, 1934, is explanatory of this situation.

"The situation with respect to the Eisler Electric Corporation is about as follows:

"The main outlet for cemented tungsten carbide manufactured by Eisler is the Super-Tool Company, headed by Mr. Bergbauer, of Detroit. We filed a suit against Bergbauer and the Super-Tool Company in the Fall of 1932, and there is no chance of reaching a trial prior to the Fall of 1934 and perhaps little chance of a decision prior to some time in 1935 or even later. Since this suit was filed the Eisler Corporation has developed some additional outlets so that the winning of the Detroit suit would not effectively terminate the operations of Eisler. There is no suit against the Eisler Corporation, for reasons which our attorneys can give better than I can. The New Jersey District is considered quite unfavorable from the standpoint of patent litigation and we would run the risk of throwing the whole patent situation wide open following suit against Eisler in New Jersey.

"The commercial activities of the Super-Tool Company and the other outlets for Eisler cemented carbide have been quite vigorous during the past few months, and the licensees of Carboloy Company have entered many complaints and have sent in SOS signals asking that we do something, if possible immediately to take care of the Eisler low-price competition. Of course, there is only one way to handle the situation surely and quickly, and that is by a license, provided the Eisler Electric Corporation will take a license substantially under our terms."

I introduce this letter as exhibit No. 30.

Jeffries had previously referred to the pending litigation between Carboloy and the Eisler Co. and its customer, the Super-Tool Co. of Detroit, in a letter to Birge, vice president of General Electric, dated March 8, 1934, as follows:

"I have been connected with a number of patent suits during the past two years and have observed a number of others. I have also talked with several prominent patent attorneys. I have in mind, too, the decisions of the Supreme Court

Digitized by Google

during the past four or five years relating to patents. There seems to be a definite tendency to invalidate patents in the courts at the present time. My thought is that the courts will be more adverse to patents rather than otherwise during the forthcoming months. * * *

"The above has a definite bearing on the policy of the Carboloy Company with respect to the prosecution of the Super-Tool suit in Detroit * * *

* * * * * * *

"I do not wish to assume responsibility for continuing the Super-Todd suit, feeling as I do about it, and therefore I think it desirable that we discuss this matter frankly and thoroughly with Mr. Swope."

I introduce this letter as exhibit No. 31.

Accordingly, on October 4, 1934, an agreement was entered into between Carboloy and the Eisler Electric Co. I introduce this license agreement as exhibit No. 32. This agreement is also of the same general type as those entered into between Carboloy and Firth and Ludlum in 1929. The principal and most noteworthy difference, however, is that article III of the agreement limits the licensee in the amount of hard metal composition it may sell to a minimum quota of 750 pounds per year, or 5 percent of the total production of Carboloy and its licensees, whichever shall be the greater.

In each one of the five licensees which were granted under the pooled patents the licensee was in turn required to license Carboloy under its patents. In each instance the licensee was prevented from exporting and in each instance the licensee was required to submit to the fixing of prices by Carboloy.

Refusals to license

On the other hand, a number of applications by American concerns for licenses to manufacture tungsten carbide under the pooled patents were refused.

A request for license by the Crucible Steel Co. was refused in 1936. Carboloy's refusal is embodied in the letter of Robbins, president of Carboloy, to Aranson of Crucible Steel, dated April 15, 1936. I introduce this letter as exhibit No. 33. Another request by Crucible is contained in the letters from Desvernine representing Crucible to Swope, president of General Electric, dated October 28, 1937, and November 10, 1937. I introduce these letters as exhibits Nos. 34 and 35. Such a license was not granted.

A request by the Chrysler Corporation for a license is contained in the letter from Harris, patent attorney for Chrysler, to the Patent Department of General Electric, dated October 5, 1938. Its refusal is expressed in Morrison's letter to Harris, October 10, 1938. I introduce these letters as exhibits Nos. 36 and 37.

That a request for license by the Triplett Electrical Instrument Co. was refused is shown by the letter of R. A. Warner to that company dated April 25, 1940. I introduce this letter as exhibit No. 38.

The letter from Robbins, president of Carboloy, to Erlicher of General Electric, dated April 24, 1935, contains the following:

"At the very inception of the use of tungsten carbide at the American Steel & Wire Company mills, American Steel & Wire Company approached us for a license to manufacture Carboloy wire-drawing dies. This license was naturally refused by us since we could not justify a license to one large user and expect other large users to buy from us at our listed prices."

I introduce this letter as exhibit No. 39.

A letter of Morrison, patent attorney of General Electric, to Shreve, a General Electric vice president, dated September 22, 1938, shows that a license was also refused to the General Cable Co. I introduce this letter as exhibit No. 40.

The Ford Motor Co. for a considerable period of years expressed strong opposition to the high-price policy being followed by the Carboloy Co. and at one point it made a request for the right to manufacture for its own use. The letter from Robbins, president of Carboloy, to Jeffries, chairman of the board of Carboloy, dated March 4, 1936, is illustrative:

"With reference to the matter of the request for shop rights for the manufacture of cemented carbide by the Ford Motor Company. We have not received a formal written request from Ford as yet but they have been repeatedly after us to answer in writing and I have insisted that they must make a formal request before I will answer in writing. I have done this mainly to stall off the proposition.

"I hesitate, even upon the receipt of a written request from Ford, to answer this. The nature of the answer may have a far-reaching effect particularly

Digitized by Google

to further disturb the Ford Motor situation. How would you feel about advising the Ford Motor Company when we do receive their request that we would like to operate in the capacity of being as cooperative as we can with regard to handling the matter, with them and then close up by telling them that we will be glad to discuss the matter with them in great detail at their convenience?

"It is my thought that by handling the matter in this way we have not definitely turned the Ford Motor Company down, thereby further upsetting the picture and at the same time we have left the door open to come into Ford's and give them a full picture of the situation. It is my hope that by the time the request comes that we can give them some kind of a picture of the recent Krupp matter along with some of our plans for the future. Tnen I believe would be the time to explain the complicated license set-up under which we operate and to give Ford the reasons why we prefer not to grant the shop right."

I introduce this letter as exhibit No. 41.

Philip McKenna

For a number of years an inventor named Philip McKenna was connected with the Vanadium Alloys Steel Co., a Carboloy licensee. His contract of employment provided that all patents developed by him in the course of his employment were to be assigned to the Vanadium Co. In 1938, however, McKenna terminated his employment with Vanadium claiming that the company had breached its employment contract with him. He took with him several of his patents and patent applications covering processes for manufacturing hard metal composition without assigning them to the Vanadium Co., claiming that because of Vanadium's breach of contract he was no longer obligated to do so. He then began the independent manufacture of various types of tungsten carbide, tantalum carbide, and titanium carbide in competition with Carboloy. Because his competition disturbed the artificial price level established by Carboloy, that company was anxious to bring him under price control. This was finally accomplished, not by any patent infringement suit or even by any threat of such litigation, but by pressure brought by Carboloy on its licensees, the Vanadium Alloys Steel Co. and the Vascoloy-Ramet Corporation, to require McKenna to assign his patents to the Vanadium Co. in accordance with the terms of his former employment contract. After this had been accomplished these patents also were added to the pool.

The first step in this procedure was taken on April 28, 1938, when Robbins, president of Carboloy, wrote to Aitchison, president of Vascoloy-Ramet Corporation, as follows:

"In connection with the same matter I have been called upon by the Patent Department of the General Electric Company regarding the two patents which were recently issued to Philip McKenna which you spoke to me about. They are quite insistent that something be done about this matter and I would like advice from you as to what is being done."

I introduce this letter as exhibit No. 42.

Accordingly, an agreement was entered into between Vascoloy-Ramet Corporation, Fansteel Metallurgical Corporation, the Ramet Corporation of America, and Vanadium Alloys Steel Co., one of the provisions of which was as follows:

"Vanadium agrees that it will promptly endeavor to obtain from Philip M. McKenna an assignment of all United States and Canadian Letters Patent, whether now or hereafter issued upon application heretofore filed, covering or disclosing any inventions or processes relating to Bonded Hard Metal Compositions and/or the products thereof and/or any and all improvements thereon; and Vanadium agrees that in the event that it shall fail to obtain such assignment within sixty (60) days from the date hereof, then Vanadium shall immediately, without expense to Fansteel, Ramet or Vascoloy Ramet, for the purpose of obtaining such assignment, institute and prosecute with diligence appropriate legal proceedings either in its own name alone or in its own name jointly with any of the following: Vascoloy-Ramet, Fansteel, Ramet and/or Carboloy Company, Inc. If and to the extent necessary to assist Vanadium in obtaining such assignment amicably within such sixty-day period, Vascoloy-Ramet will agree to pay to Philip M. McKenna a royalty not to exceed two per cent (2%) of Vascoloy-Ramet's net sale price on all grades "E" and "EE" Bonded Hard Metal Composition made by Vascoloy-Ramet under the teachings of the Philip M. McKenna patents so assigned, relating specifically to such grades and sold after the date of this agreement, and Vanadium will agree to pay Philip M. McKenna a royalty not to exceed two per cent (2%) of Vanadium's net sale price on all

Digitized by Google

Bonded Hard Metal Composition other than grades "E" and "EE" made by Vascoloy-Ramet under the teachings of the Philip M. McKenna patents so assigned, relating to such other grades and sold by Vanadium after the date of this agreement, but the form of any such agreement shall first be approved by the respective counsel for Vascoloy-Ramet and Vanadium."

I introduce this agreement as exhibit No. 43.

Thereafter, litigation was instituted by the Vanadium Co. against McKenna which was terminated by an agreement dated October 27, 1939, by which the McKenna patents were assigned to the Vanadium Co., McKenna taking back a free nonexclusive license under which he was bound to sell at the same prices as the Vanadium Co. In view of the fact that Vanadium was also a Carboloy licensee, its prices were, of course, Carboloy prices.

On December 7, 1939, Jeffries, chairman of the board of Carboloy, wrote to Morrison, of General Electric, with reference to the above agreement, stating that "The settlement is not quite the one that Mr. Robbins and I said would be agreeable to the Carboloy Co." He also stated, however, that the agreement was adequate to satisfy Carboloy's demands. He also noted that Carboloy did not use any of the McKenna patents at present and that it had no present intention of doing so. I introduce this letter as exhibit No. 44.

Thus General Electric and Carboloy have placed under price control an independent manufacturer producing under his own independent patents. General Electric and Carboloy have also obtained additional patent rights with which to promote and perpetuate its monopoly.

Prices maintained as the result of the patent pool—Comparison with German prices

I introduce as exhibit No. 45 a chart prepared in the Department of Justice entitled "Carboloy Co. Price For Tungsten Carbide Since 1928."

This graph was prepared on the basis of price information furnished to the Department of Justice by the Carboloy Co. and other producers in the industry. The low prices prevailing in 1927 and 1928 represented the first sales made in this country by Thomas Prosser & Son, of New York, a Krupp importer. The vertical line at the left of the chart represents the increase in the American price level which took place immediately after the execution on November 5, 1928, of the patent pooling agreement. You will note that the chart from that time on shows the maximum prices on the top line and the minimum prices on the lower line, which is broken.

During 1929 and early 1930, the maximum price was at the rate of $453 a pound, and the minimum price was at the rate of about $360 a pound. This minimum price was granted on orders amounting to $20,000 or more. From the middle of 1930 to the middle of 1932, the maximum price continued to be $453 a pound, but the minimum price dropped to about $225 a pound. During this period the minimum price was charged for pieces of tungsten carbide weighing at least 1,000 grams. As pieces of such size were probably never made at that time, it is apparent that the $1 per gram price remained substantially unchanged. From the middle of 1932 until October 1, 1936, the maximum price continued at $453 a pound, but a slightly lower minimum price was granted on pieces of 100 grams or more. However, during this period, some additional concessions on price were made by granting larger discounts for quantity purchases.

The spectacular drop in the maximum price which came on October 1, 1936, followed the elimination of Krupp and its dealers from the American market. At this time Carboloy abandoned its former practice of granting lower per gram prices for larger pieces and maintained its maximum price of slightly more than $200 per pound for prices of all sizes and granting discounts therefrom entirely upon the basis of the amount of business done by the individual purchaser. During the period from October 1, 1936, until the date of the first indictment, August 30, 1940, prices very near the maximum were charged to almost all purchasers, and prices near the minimum were granted to only a very few large quantity purchasers, such as General Motors, Ford, and similar concerns.

The dotted line showing the 1928–35 average price is based upon data from the files of the Carboloy Co. In no sense should this line be interpreted to indicate that the average price during those years remained constant. If complete data were at hand, the line representing the average price could be drawn to show a price of $453 in 1929, which was gradually reduced until in 1936 it would be about $225.

Digitized by Google

The individual points shown in the period from 1937 into 1940 represent average price figures on sales by the Carboloy Co. at the time in question. During this period Carboloy reported to Krupp the number of pounds of material which it sold, together with the total sales price of such material. From these two figures it is simple to compute the average price per pound of material sold. It should be pointed out, however, that the average price charged by Carboloy during this period was substantially lower than the average prices charged by Carboloy licensees by reason of the fact that Carboloy served the larger customers at large discounts, leaving the smaller purchasers to be served at prices near the maximum by its licensees.

On August 30, 1940, the first indictment was returned. On the following business day the various companies in the industry announced new and substantially reduced prices. I introduce as exhibit No. 46 a circular letter from the Firth-Sterling Steel Co. to its customers informing them that new and lower prices would shortly be announced in view of the action of the Department of Justice and the invalidation of the Carboloy patents.

Because the industry pricing practices have, since September 1, 1940, become even more complicated, it is not practical to show maximum and minimum prices for the period of time since that date. Suffice it to say that the market broke sharply. The dotted line shown on the chart represents the average price figure determined in early 1941 by the Firth-Sterling Steel Co. with relation to its own sales. It is probable that prices charged by the Carboloy Co. have been even lower in view of Carboloy's larger volume.

I now introduce as exhibit No. 47 a chart entitled "Comparison of German and American Prices in 1935." This chart is an enlarged reproduction prepared by the Department of Justice of a chart prepared by the Carboloy Co. on October 24, 1935. The conclusion to be gathered from this chart is obvious. For example, a piece of tungsten carbide weighing 10 grams, which is the average size piece used by American industry, would cost in the United States approximately $8; while its price in Germany would be approximately $1.75. Similarly, a piece of tungsten carbide weighing 20 grams, which sold in Germany for about $2, was priced in 1935 in the United States at about $12.50.

I now introduce as exhibit No. 48 a chart entitled "Comparison of German and American Prices in 1939." This chart was prepared by the Department of Justice on the basis of data contained in a letter to Robbins, president of Carboloy, from Ritner, his assistant, dated June 9, 1939. This letter states that the data contained therein were obtained from a letter from Dr. Ammann, director of Krupp, dated May 10, 1939. I introduce the letter to Robbins as exhibit No. 49. As may be seen, Carboloy's prices in 1939 were based upon the quantity purchased by the customer in an individual order. As I have stated previously, the lowest prices at this time were granted only to a very few large consumers, such as Ford and General Motors; while the rank and file of factories and machine shops purchased at or near the maximum price. In order to explain the chart, I quote two specific examples of figures shown. In the case of a 10-gram piece which, as I stated before, is a piece of average size, the price in Germany was $1.40, while the price in the United States varied from $2.10 to $4.50, depending upon the number of identical pieces purchased at one time. Similarly, in the case of a 20-gram piece, the price in Germany was $2.24; while the prices in the United States ranged from $4.20 to $9.

High prices established and maintained by the patent pool greatly restricted American manufacture and use of tungsten carbide and machine tools containing it—they brought about the elimination of competition with General Electric

In 1928 while the pooling agreement was being negotiated, General Electric suggested to Krupp that a minimum price of $50 per pound as the one to be established. This was the prevailing market price at this time in the United States. They then had in mind the extra costs of introduction and early exploitation. The letter of Stearns, manager of special contracts of General Electric, to Preussing, director of Krupp, dated October 3, 1928, which I introduce as exhibit No. 50, contains the following:

"You will recall that at the time of our conference we suggested a minimum price of $50 a pound for hard metal composition—when sold as such. * * *"

That this figure had been fully discussed amongst the officials of General Electric is shown by the letter of Carboloy's first president, Mallory, to Stearns

Digitized by Google

of General Electric, dated July 26, 1928, in which he suggested that the basic price for tungsten carbide should be about $50 per pound. I introduce this letter as exhibit No. 51. Mallory remarked that "* * * on account of the high price of the product and the unusual opportunity for profit the temptation for bootlegging activities will be great." Mallory suggested this "high" price when he was fully aware of the practical difficulties attending the introduction of a new and radically different product such as tungsten carbide. He stated:

"At this time I want to go on record that the sales problem involved in commercializing Carboloy is a difficult one."

Notwithstanding these suggestions as to the proper price, General Electric, through Carboloy, immediately after the execution of the pooling agreement November 5, 1928, established a price of $453 a pound to be observed by itself and its licensees and by Krupp and Krupp's dealers. Such a price could not be justified by the cost of manufacturing the product. The Department has been informed that cost of producing tungsten carbide in 1940 was approximately 5 cents per gram or $23 per pound. The letter from a General Electric engineer, LeFevre, to Birge, a General Electric vice president, dated March 15, 1930, which I introduce as exhibit No. 52, set forth that tungsten carbide was then being produced in the General Electric Schenectady works for a cost of about $12 per pound, but that the production cost in the Cleveland wire works of General Electric, which produced the metal for the Carboloy Co., was at the rate of $28.80 per pound.

The memorandum by Jeffries, then president of Carboloy, of his discussion with Dr. Ernst Ammann, the director of Krupp in charge of tungsten carbide manufacturing, dated October 15, 1935, which I introduce as exhibit No. 53, reports that Germany was consuming each month an amount of tungsten carbide (about 8,000 pounds) equal to the American consumption for an entire year. He stated that, assuming the full effect of the recent devaluation of the dollar, the total cash return to the American manufacturers was about 65 percent of the German dollar volume, but that, giving no consideration to the devaluation, the dollar volume in each country was approximately the same.

The letter of Jeffries, then president of Carboloy, to Swope, then president of the General Electric Co., dated December 24, 1936, which I introduce as exhibit No. 54, contains the following:

"Europe is consuming nearly eight times the poundage of cemented carbide that is consumed in the United States and Canada. Our gross revenues are probably fifty or sixty percent of those of the Europeans. There is much further room for price reduction and, in fact, price reductions must be made regularly between now and 1943 when the main patent expires."

A paper submitted to General Electric after 1936 by Dr. Ernst Ammann, a director of Krupp, entitled "The Use of Cemented Carbide in America," which I introduce as exhibit No. 55, pointed out that the production of tungsten carbide was booming in Germany and that in view of this fact "* * * it is striking that the United States * * * in spite of having the most important iron working industry and excellent cemented carbides at disposal, is employing cemented carbides only to a very modest extent." He then gave figures showing that, although American steel production was over twice that of Germany, German carbide production was about 10 times that of America. He then concluded that "* * * in Germany roughly 22 times more cemented carbide per unit of produced steel is consumed than in America." He then pointed out that, although cemented carbides in America have found their greatest application in the automotive industry, per manufactured automobile Germany used 20 times as much tungsten carbide as did the United States. In his conclusion he remarked that the undeveloped state of the industry in the United States was a strange phenomenon in view of the fact that America was generally known for its ability to grasp and develop the most modern manufacturing methods. I quote:

"Due to research and practical utilization of the joint efforts within the machining industry and due to the development of a sales service rich in experience, the cemented carbide business in Germany has taken a huge upswing.

"Tools and machine tools form the basis for any professional production of goods in a country generally. They serve the production of all other machines, expedients, and devices for traffic, agriculture, power production, and trade. Without highly developed tools and machine tool industry in no country is there a production of goods economical to the maximum.

"The advantages of the introduction of cemented carbides, therefore, were to the good of the entire German industrial and economical systems. Both these

Digitized by Google

systems could make use of the most modern tools and machine tools in order to bring the success of their production to the highest possible results.

"Similar to Germany, other European industrial countries have found application for cemented carbides on a broad basis.

"In comparing European and non-European industrial countries it is striking that the United States, in spite of having the most important iron working industry and excellent cemented carbides at disposal, is employing cemented carbides only to a very modest extent.

"The following comparative table of figures of consumption will best illustrate this.

"The production of raw steel in 1934 amounted—in America, 26,000,000 tons; in Germany, 12,000,000 tons. Proportion, 2.2:1.

"The consumption of cemented carbides in 1934 shows a proportion of—America: Germany, 1:9.8.

"This means that in Germany roughly 22 times more cemented carbide per unit of produced steel is consumed than in America.

"Considering the fact that scarcely 5% of the entire turn-over in Germany is used for drawing dies, while in America about 35% is used, this proportion grows still more unfavorable for America in the main field of cemented carbide application, namely, the machining industry.

"The cemented carbide consumption per manufactured automobile in 1934 was, in America, .5 grams; in Germany, 10 grams. Proportion, 1:20.

"It is a known fact that cemented carbides have found their greatest application in the American automotive industry while the remaining machining industries—for instance, the machine tool industry, the fixture industry, the mining industry, the chemical and chilled iron industries have used only a little carbide.

"Fifteen chilled iron mills in Germany consume 1,500 kilos of cemented carbide annually for the machining of chilled iron rolls, for roughing the chill and for forming profiles. (Compare figure No. 2.) The larger number of such mills in the United States hardly use carbides for this purpose at all.

"The general German machine industry consumes more than 10,000 kilos annually. In this branch, practice has taught that with four to five standard tools, almost all working pieces as, for instance, cog wheels, shafts, bearings, spindles, pulleys, cylinders, etc., can be machined. This is another indication that in this part of the American industrial system too only a fraction of the German consumption of cemented carbide is employed whereas it has become a matter of course in Germany. (See figures 4 and 5.)

"A comparison of the development of the raw steel production in Germany and America which is considered a sensitive barometer for business will show that since 1930 the tendency of the curves of cemented carbide consumption in both countries agrees with the production of raw steel. Only the two first years, 1928 and 1929, make an exception because tools as well as machines were not sufficiently altered for the use of cemented carbides. (See figure 3.)

"This means that the cemented carbide turn-over is directly dependent upon the quantities of raw steel consumed. The curves for both countries show this distinctly with the only difference being that the cemented carbide consumption per ton of raw steel in America is considerably smaller. Moreover, the production figures demonstrate strikingly how, during a boom in Germany which made the procuring of modern high efficiency machines possible for many factories, the turn-over in cemented carbides increased tremendously while the American turn-over in cemented carbides increased only slowly according to the increasing consumption of raw steel.

"Granting that the general introduction of high speed steel also took place comparatively slowly because the user welcomed the higher efficiency of the high speed steels but could not decide to spend more money for them, it must be said that the American industry certainly had time and opportunity enough to check on the advantages and the economy of cemented carbides in American factories during the ten years since cemented carbide was invented. The highly developed American machine tool industry surely was in a position, too, to provide the necessary machinery.

"This could have been expected also from the point of view of the interests of political economics because the United States, too, is lacking tungsten resources and has to import 75% of its requirements from foreign countries.

"Most of the high speed steels and machine steels contain tungsten, the same metal which is also needed for the manufacture of cemented carbide. Taking the output of a high speed steel with about 20% tungsten as a base, experience so far allow the assumption that the output of about 40 kilos high

Digitized by Google

speed steel is equal to the output of about 1 kilo cemented carbide. At an equal output the tungsten requirements, therefore, amount to 8 kilos using high speed steel and only .9 kilos using cemented carbide.

"If cemented carbides were introduced generally the American domestic production of tungsten would be sufficient to cover the entire tungsten requirements of the American machining industry.

"All these facts, showing that consciously the American industry employs cemented carbide only to a limited degree, force us to the assumption that there must exist fundamental differences between American and German conditions.

"Under the pressure for higher efficiency and shorter deliveries the use of cemented carbides in Germany has achieved a tremendous uplift, in comparison with which the American development is the less understandable, as America is generally known for its trend of grasping for the latest and most progressive manufacturing methods and developing them further.

"If our research is to be complete in order to serve the progress of our own economical system we cannot neglect this disagreement between American and European development of the employment of cemented carbides.

"After a thorough study and comparison of the conditions in America and in Europe it will be left to another paper to illustrate on which actual differences the varying developments described above are founded."

Beginning in 1931 widespread opposition within the General Electric organization itself developed toward the high price policy being followed by the Carboloy Co. A group of engineers connected with the Schenectady Works Laboratory of General Electric conducted a campaign to cause the dissolution of the Carboloy Co. as such and the assumption of its functions by the Works Laboratory of General Electric. On September 17, 1931, a concurrent suggestion along these lines was made by Merrill, an engineer of the Works Laboratory, and addressed to the "Office Employees Suggestion Committee," a group regularly established under the direction of one of the General Electric vice presidents for the receipt and study of such constructive suggestions. This letter, exhibit No. 56, speaks for itself and I quote it in full:

"I understand there is some question as to the advisability of continuing the sales of carboloy with the present set-up, and if changes are to be made, I submit the following for consideration.

"*Use of Carboloy tools.*—We have in the neighborhood of three years' experience in the manufacture and uses of carboloy tools and carboloy for other purposes.

"We could not justify the use of carboloy in our shops as a substitute for high-speed steel if the finished tools cost us more than 2½ times to 3 times the cost of high-speed steel. There are only a few exceptions in which we could pay higher prices for carboloy to replace such materials as diamonds in some of our cutting operations, but probably not over 25 jobs at a maximum in the Schenectady plant where we could consider the use of carboloy at prices beyond 2½ to 3 times the cost of steel. We think, with opinions to the contrary which are very freely expressed, that we know something whereof we speak on this subject.

"We have made in the last 24 months 11,310 lbs. of carboloy. Practically all of it has been applied to cutting tools. 60% of this output has been used in the Schenectady plant and 40% of it in our other plants. This is as against 8,854 lbs. of carboloy made by Krupp, Carboloy Company, Firth Sterling, and Ludlum for the same period. The Carboloy Company made 3,332 lbs. which covers their initial sales and replacements.

"I wish to call your particular attention to the fact that none of the above-mentioned concerns includes machining of steel in its category. They simply advise their customers that carboloy is not suitable and cannot be used on steel. About 60% of all our applications in the Schenectady plant have been and are on the machining of various steels, particularly such hard work as cold-rolled steel, drop forgings, and castings. Now, the principal reason for these various vendors not selling their tools for machining steel which is such an important item in the machine-shop industry today is that the prices they have to maintain for the carboloy does not allow them to put on carboloy enough to stand machining operations on steel. From a study of our drawings compared with the Carboloy Company drawings, for instance, it will be seen that we use from two to three times the depth of carboloy that they do. We are, therefore, as

Digitized by Google

backers of the Carboloy Company and other licensees in the absurd position of exploiting a cutting tool which is limited to cast iron and a few alloys.

"With the absurdly fictitious prices which are being maintained for carboloy tips, were they to put on enough of this material to machine steel, they would, of course, sell much less than they do at present, which to my way of thinking is just negligible. Another absurdity in the present hook-up is in the milling machine operations. A good sized milling cutter of 50 to 60 teeth with the necessary amount of carboloy to do a good job costs the customer approximately as much as a new milling machine to drive the cutter. These are a few of the high spots in the present situation.

"*Manufacture.*—A great deal of mystery has surrounded the production of this material since its inception. As a matter of fact, it is just about as complicated as making a good grade of concrete for a sidewalk: Grind up material, pass it through a mesh, put a certain percentage of binder with it, press it into a cake and bake it.

"We are equipped in Schenectady at the present time to manufacture 200 lbs. per week in various top sizes ready to be ground for tools. This is based on an 8 hr. shift of one man and one boy.

"*Manufacturing cost of tungsten.*—Manufacturing cost of tungsten on the basis of 200 lbs. per week (and we have maintained as high as 150 lbs. per week for a number of weeks in succession) is $8.00 per lb., and this is just as good tungsten carbide as is being made by anybody in North America or Europe. If we should maintain production of 200 lbs. per week, there is a further reduction possible of $1.75 per lb., bringing the price to $6.25 for unground tips. This shows the absurdity of trying to maintain the prices which we have evidently committed ourselves to, or perhaps others have committed us to.

"I am attaching K prints of 60 of our standard tools we manufacture and carry in stock. You will note several of these on each sheet give our manufacturing cost on the right-hand column and the cost of the corresponding high-speed steel tools in the left-hand column. You will see that our manufacturing cost runs about twice the cost of high-speed steel, some a litle more, and some a little less. These tools include, as mentioned above, about two or three times the amount of carboloy the vendors can afford to put on theirs.

"There are two courses open to the General Electric Co. if we are not to continue to lose money. The first is to forget carboloy entirely; simply manufacture it for our own use and get out of the business as quickly and as gracefully as possible.

"The second alternative, and probably the better, would be to cancel all agreements or reduce the price of tips ready for grinding to $50.00 a pound, which is a fair market price for these goods and is approximately the price that I found the Krupp Company were selling tip material for last year. This, you will note, would give us approximately a 7:1 mark-up over manufacturing cost, which should be a satisfactory profit. The unground tips could then be sold to tool manufacturers as well as ultimate users for their own brazing and grinding.

"I wish to make the following recommendation for set-up to handle this work.

"1. There is no necessity whatever for any special commercial set-up, no trained salesmen, no particular selling expense.

"2. There is no need for any extensive advertising because carboloy under its various names is now well known to the trade, and the question of price is practically the one and only reason why such small quantities have been disposed of in the past two years.

"3. All that is necessary is printed literature giving the standard sizes of tips from the smallest to the largest which we have to be adequate to meet tool conditions, and a price list on a basis of about $50.00 per lb.

"4. We would make no guarantees on this material whatever. It would be in the same class as the high-speed steel which we buy and have been buying for years. We buy the best steel we can for the various types of tools. If it works, O. K.; if it does not, we ask for no comeback and expect none from the steel supplier. Carboloy material should be in the same class.

"5. *Profits.*—It would seem reasonable to suppose that we could dispose of, say, 400 lbs. per week to the trade, which is a little more than twice what we have been absorbing ourselves at times in the various G. E. plants, with a profit above manufacturing cost of $40.00 per lb. This would give us $16,000.00 a week, which capacity could be increased to 600 lbs. with practically no additional investment in the Schenectady plant.

Digitized by Google

"With this program there would be no loss to the company during periods of low volume of sales.

"The Schenectady Works would very much appreciate an opportunity to manufacture this material, and the Schenectady Works Laboratory would like to demonstrate the soundness of the above proposition by taking over the selling of it for a period of, say, two years."

As a result of the above letter, hearings were held before the committee and a subcommittee appointed to handle it. The subcommittee reported adversely to the plan on the ground that "* * * due to the contractual relations now existing between the General Co. and the Carboloy Co., on the one hand, and the Krupp Co., the Firth-Sterling Co., and the Ludlum Steel Co., it would be impractical at the present time * * *" to put the plan into effect. However, when the report of the subcommittee was submitted to the entire group the plan received a greater measure of approval. Nevertheless, as is apparent, the plan was never put into effect. I introduce the committee's report as exhibit No. 57.

In 1938 a meeting was held of the executives and principal employees of the Carboloy Co., where the future price policy of the Carboloy Co. was discussed. These minutes of the meeting are introduced as exhibit No. 58. According to the minutes, President Robbins opened the discussions by stating that the basic patents would begin to expire in 1942 and that a complete change in the business policy of the Carboloy Co. was made necessary by this fact. Opinions were taken on the effect which a 10-cent per gram price ($45 per pound) would have on Carboloy operations, although Robbins observed that "based on European experience, the net price of ten cents per gram is probably higher than can be expected." Merrill, who was an engineer of General Electric as well as a director of Carboloy, made the following observations, contrasting Carboloy's price policy and resulting sales volume with the greater use which General Electric itself could make of tungsten carbide, since it would manufacture its own tungsten carbide:

"1. There are five times as many tools in General Electric plants as if Carboloy had handled the sales direct.

"2. The Works Laboratory makes and sells tools and other carbide parts at prices lower than the Carboloy Company will sell and makes a profit which carries the cost of test work.

"3. The Works Laboratory sold within the General Electric Company 1/7 of the total Carboloy produced last year."

At this meeting of the Carboloy executives on June 28, 1938, Jeffries is reported to have said:

"The artificialities represented by price control have retarded the use of carbide on many large volume applications. Agreements with Krupp made it impossible to remove the artificialities before this time.

"As we go forward more and more of the artificialities will be removed until we are free from all of them in 1942."

The price graph which I have introduced shows that there had been no substantial reduction in price until October 1936 after Krupp had been eliminated from the American market.

The high price policy pursued by Carboloy has been criticized again and again by Carboloy licensees, by the machine tool industry, and by customers. The opposition of Mr. L. Gerald Firth, president of the Firth-Sterling Steel Co., the second largest American producer of tungsten carbide, has been long standing. I introduce, as exhibit No. 59, a letter dated December 28, 1931, which Firth wrote to Mallory, then president of the Carboloy Co. I quote as follows:

"I still feel that this is a very vital and urgent matter. The present high price of cemented carbides is from ten to fifteen times, in many cases, the price at which the material is sold in Germany * * *

* * * * * * *

"Please bear in mind that as I have said before, the price in this country is from ten to fifteen times the German price and that is a difficult thing to justify now that industry in general is recognizing the value of our product."

It has already been reported in a general way that, in the spring of 1940 Mr. Firth submitted a complaint to the Antitrust Division based upon the fact that under the terms of his license agreement, on May 20, 1940, he was required to quote in the amount of $8,730 for 1,000 shell-turning tools to the Frankfort Arsenal whereas if he had been able to determine his own price he would have quoted in the sum of $3,375 on the same invitation for bids.

Digitized by Google

In 1935 a special research committee was formed under the auspices of the American Society of Mechanical Engineers for the purpose of studying progress which had been made in the cutting of metals. Mr. Coleman Sellers, III, chairman of this committee, stated in a letter dated June 27, 1935, to President Robbins of Carboloy, which I introduce as exhibit No. 60, that—

"Considerable evidence was presented to show that the price of tungsten carbide tips of the larger sizes is retarding the use of this material. It seems to me that those using tungsten carbide tools to any great extent are engaged in production work using comparatively small tools. This type of shop can easily calculate the savings from the use of this material and definitely determine whether or not it pays them to invest. On this basis a great many tools have been sold and are in use at the present time.

"The field which has been backward in promoting the greater use of the carbides is represented by the jobbing shop or small-lot production shops. Tools cannot often be purchased for specific jobs or if they are, these jobs are not in operation continuously which means that the tools will only be used occasionally. These shops could make good use of this material on jobbing work if they would invest in sufficient quantities of tools to supply their needs. These tools wou'd be larger on an average than the production shops because the amount of stock to be removed cannot be controlled as closely with small lots as with high production. Consequently, heavier cuts must be expected, not only from this reason but because this class of shop would include those doing larger and heavier work which cannot be produced on a production basis.

"Mr. R. E. W. Harrison, of the Department of Commerce at Washington, has heard from so many quarters complaints regarding price that he feels very strongly on the subject although he cannot take any active part in the discussion because of his official position. However, he told me in confidence, that he wants to recommend the various Government Navy Yards to go into tantalum and tungsten carbide tools in a big way but is afraid to recommend this on account of the high price of the material. If you know anything about the size of our Navy Yards you will know that this one item alone would mean a lot of business."

The Warner & Swasey Co. of Cleveland, is one of the largest American manufacturers of a machine tool called the turret lathe. Mr. Charles J. Stilwell, a vice president of that company, has on numerous occasions attempted to pursuade the Carboloy Co. substantitally to reduce its prices in order that a more widespread use of tungsten carbide in small-lot production shops could be made possible. On May 20, 1936, Mr. Stilwell wrote a letter to Robbins, president of the Carboloy Co., which I introduce as exhibit No. 61. I quote:

"As you know, few machine tool manufacturers in this country have been more interested, and I think few have been more cooperative, in the development and use of cemented carbide alloys than we. We have not made nearly the progress in the United States that has been made in Germany, France, and more particularly in England. I reported to your representative and had a long talk with Mr. Prosser after my return from Europe in 1934. Because of the more systematic, and I believe more scientific development and presentation of collected information on the subject of cemented carbide tools that has been carried on in Europe, the average user of cutting tools is far more intelligent on the general subject than we are in this country.

"Somehow or other, the people who have the development and sales of tungsten alloys in England have secured a greater acceptance and more general usage of these tools than exists here. I know from personal contact with two manufacturers in that country that the project is carried on on a highly profitable basis. The prices are very much lower, as you know, than we have to pay you. I think it is fair to assume that your own business in Carboloy is equally highly profitable, but you are doing it at the expense of general usage on the part of small manufacturers. Your company seems to prefer high profit and a limited market, and, if I may say so, a retarded growth of volume, rather than a large volume, smaller unit profit, and the encouragement of a much wider usage over a period of years.

"This is a policy which I am frank to say I cannot agree with for two reasons: (1) We cannot understand the wisdom of it from your own standpoint looking to the future; (2) the exceedingly high price charged for Carboloy retards the growth of our own sales of Carboloy and makes our job of introducing that metal many times harder.

"Until you can secure an arrangement whereby the cost of carbide tools to the general users can be much reduced, I do not believe that we will enjoy the

Digitized by Google

economy of production that could be brought about by general acceptance on the part of manufacturers, large and small. You will forgive my writing you so frankly, but I think that this whole question forms part of our interest in the machine-tool business even though it happens to be your own particular business."

On September 21, 1936, Stilwell stated as follows in a memorandum which I introduce as exhibit No. 62:

"From Wickman's letter of December 7, 1934, in connection with tools which I had ordered in England that year, we have the following information:

"A tool which we tested out here costs $6.87 in England. Mr. Lange advises me that a similar tool purchased here from the Carboloy Company would cost $20.48.

"This information is for Mr. Robbins at the time of his call."

Also on May 20, 1936, a letter of protest was written to the Carboloy Co. by Mr. W. E. Whipp, of the Monarch Machine Tool Co., of Sidney, Ohio. Mr. Whipp is also a very active member of the marketing committee of the Machine Tool Builders Association. I introduce this letter as exhibit No. 63. The letter contains the following:

"We are vastly more interested in when the Carboloy Company is going to reduce the price of Carboloy and Tantalum Carbide and get it down somewhere near the price at which it sells in Eureopean countries. We are paying eight to ten times the prices for these tools that they bring in foreign countries, and this excessive price is a very serious handicap. As a matter of fact, machine shops in continental Europe are far surpassing us in this country on many machining jobs, due to their far more universal use of these new carbide tools. You can never put the job over in this country so long as there is this wide difference in price."

NATURE OF THE PATENTS POOLED

The doubtful validity of certain of the patents was recognized when they were pooled

There is evidence that some of the parties to the pool realized that certain of the patents which had been pooled were of doubtful validity and might not stand a test in court. Hence, from time to time, there were absorbed into the combination a number of American manufacturers who began independently to produce hard metal compositions under competing patents held respectively by them. In this way the pool absorbed rights under patents for tantalum carbide and titanium carbide. A process of monopolization by the pooling of patents which potentially competed and which were of doubtful validity having been begun by a pooling of the interests of the two owners of the principal patents involved, namely, General Electric and Krupp, was continued by the following policies: (*a*) A policy of filing patent-infringement suits against all "intruders" in the field which, as to the stronger intruders, were settled on the basis of restrictive cross-licensing agreements and, in the case of the weaker intruders, were resolved by consent decrees eliminating such threatened competition; (*b*) a policy of preventing judicial investigation and determination of the validity of the pooled patents in the United States as to United States patents, and also in foreign countries with regard to corresponding foreign patents; (*c*) a policy of suppressing such technical information and knowledge gained by the parties to the pool, the availability of which would better equip an outsider to challenge the validity of the pool and the patents embraced in it. These three policies not only protected the pool against attack but also reenforced and augmented the pool with rights under all related patents. These policies also laid a foundation, through the acquisition of all available patents and through the suppression of potential competitors, upon which the parties could continue the monopoly thus acquired long after the period when their original patents would have expired.

During the 1920's, when the United States patents, which were later pooled, were being taken out and the product tungsten carbide was being perfected in the laboratories, it was recognized, particularly by the patent attorneys of General Electric in charge of these matters, that Krupp's patents and also General Electric's patents were neither broad nor strong. Numerous memoranda were written by Morrison, a General Electric patent attorney, in which he called attention to the fact that some of the patents, and certain claims of some of the other patents, were of doubtful validity. For example, Morrison in a memorandum to Lunt, apparently his superior in General Electric, dated October 7, 1927, which I intro-

Digitized by Google

duce as exhibit 64, made the following statement with reference to the Krupp's first Schroter patent, which is the so-called basic patent supporting the pool:

"Schroter patent No. 1,549,615 contains one broad claim on what is known as the German process for preparing carboloy. This process, however, appears also to be anticipated by the Voigtlander patent No. 295,726."

He then referred to the application for the Krupp's second Schroter patent as follows:

"It might be argued that the Baumhauer patent No. 1,512,191 anticipates the article claims of the Schroter application, since Baumhauer discloses a combination of tungsten carbide with widely varying amounts of auxiliary metal, although particular amounts of auxiliary metal are not specified in the Baumhauer patent.

"Schroter application No. 104,613 contains no allowed claims. It is entirely possible that this application may be held to disclose nothing patentable over Schroter patent No. 1,549,615, since the application varies from the patent substantially only in the content of auxiliary metal. It appears that it might also be argued that the Schroter application No. 104,613 does not distinguish patentability from Baumhauer."

In a memorandum to Davis, General Electric vice-president, dated January 4, 1928, which I introduce as exhibit No. 65, Morrison stated with reference to claim 7 of the Baumhauer patent as follows:

"While this claim reads directly on our Hoyt product, it is clearly anticipated by the German patent to Voigtlander et al., No. 295,726 of 1916, which discloses a combination of tungsten carbide with several percent of molybdenum."

In discussing Schroter patent No. 1,549,615, the first or so-called "basic" Schroter patent, he stated as follows:

"The method claim (No. 4) of the patent is infringed by the Hoyt process. This claim, however, is of very doubtful validity in view of the Voigtlander patent cited above."

He then referred to the pending application for the second Schroter patent as follows:

"No claims have been allowed in the application. While claims other than those specified below may eventually be obtained, the claims which we may fairly expect to be allowed by the Patent Office will probably be limited to: (1) A composition consisting largely of tungsten and containing carbon and more than 10 percent cobalt, (2) a composition consisting largely of tungsten and containing carbon and from 10 to 20 percent cobalt, (3) sintered compositions of the above.

"* * * The validity of 1, 2, and 3 is not entirely without question in view of the Baumhauer patent noted above, which discloses tungsten carbide saturated with 'iron *or a like metal*,' and in view of the fact that it is old to consolidate powdered materials by sintering."

Morrison in another memorandum to Davis, dated March 29, 1928, which I introduce as exhibit No. 66, made the following statement, also with reference to the application for Krupp's second Schroeder patent:

"Schroter application, Serial No. 104,613, covers a combination of tungsten carbide and cobalt, the cobalt content ranging from 10 to 20% of the content of the alloy. This application is *not* a division of the Schroter application which matured into patent No. 1,549,615. There is a question in my mind as to whether a valid patent can be obtained on this application in view of the Schroter patent No. 1,549,615."

Morrison, in a still later memorandum to Davis, dated April 7, 1928, which is with reference to Morrison's conference with H. H. Knight, Krupp's American patent attorney, and which I introduce as exhibit No. 67, stated:

"He [Mr. Knight] expressed the opinion that the patent situation could be improved by a combination of the interests of the Krupp Company and the General Electric Company but at best it was somewhat loose since we apparently cannot cover an alloy consisting of tungsten, carbon, and cobalt in which the cobalt content is more than 10% of the alloy. You will recall that this is the combination which I have tried to cover in the Schroter application Serial No. 104,613, but which I believe to be invalid in view of the prior Schroter patent. Of course, if a patent can be obtained on an alloy of tungsten, carbon, and cobalt which has 6% carbon and contains no free graphite, such a patent would be very helpful. I do not know that such a patent would be valid but in view of the Schroter patent in which he states that free carbon is desirable, it appears that such a patent might be very useful either to the General Electric or to the Krupp Company."

Digitized by Google

In the succeeding years, during the period when General Electric was granting restrictive patent licenses to such newcomers or intruders in the tungsten carbide field as it could not induce to abandon such manufacture, it was brought to General Electric's attention again and again that these various and sundry invaders sincerely believed that the patents then in the pool were either invalid, or so clearly limited in scope, that the patents obtained by the newcomers gave them adequate protection and the right to compete. The letter from the patent attorney of the American Cutting Alloys Co., which became a restricted Carboloy licensee for titanium carbide only, written to Carboloy on August 20, 1932, contains the representation that the Carboloy patents were "so far as broad claims are concerned not to be upheld in court over the prior art * * *" I introduce this letter as exhibit No. 68.

On August 23, 1932, Mallory, then chairman of the board of Carboloy, wrote to Jeffries, then president of Carboloy, nothing the desirability of bringing the American Cutting Alloys Co. under license restriction. He pointed out the danger to Carboloy of an otherwise possible alliance between the American Cutting Alloys Co. and the Fansteel Products Co., another new entry into the tungsten and tantalum carbide business. He stated that—

"Fansteel's patent attorney will unquestionably tell them [the American Company] that the Carboloy patents are not broad enough to cover this [titanium carbide] development."

I introduce this letter as exhibit No. 69.

In early 1934, two scientific articles were published in the magazine "Iron Age" which had been written by Karl Schroeder, the Osram engineer to whom had been granted the principal patents contributed by Krupp to the patent pool. These articles contain several statements which represent points of view at variance with those taken by the attorneys and experts of the Carboloy Co. in the only litigation in which the Carboloy patents were ever involved. When these scientific articles came to the attention of the General Electric Co., steps were taken to prevent the dissemination of similar information in the future. I introduce as exhibit No. 70 a letter dated February 7, 1934, from Scudder of General Electric to Peirce, General Electric's representative in Germany. It discloses a feeling of legal insecurity and furnishes an example of an organized attempt to suppress knowledge in a field wherein persons concerned are supposedly contributing to the advancement of science and the useful arts. I shall read the body of the letter in full:

"We have just learned that an article has been published in the IRON AGE in this country February 1, 1934, page 27, entitled 'Inception and Development of Hard Metal Carbides.' This article is by Mr. Karl Schroeder, who is an employee of the Osram Company. It is indicated that another article will be forthcoming shortly.

"As you know, we have our Lamp Agreement with the Osram Company. We also have an agreement with Krupp by which we are entitled to certain rights on Osram inventions relating to cemented carbides and which do not come within the scope of our I. G. E.-Osram Agreement. The article in question deals with these cemented carbides.

"We are much surprised that Mr. Schroeder was permitted to publish an article of this kind without having first submitted it to the General Electric Patent Department. As I believe you fully appreciate, sometimes articles written by an invenor from whom we have the patent rights may be embarrassing to us and may be used against us in case we have to bring infringement suits which involve the patents of that inventor or even patents of a more or less similar nature on inventions which may not be made by that inventor but which we may own.

"We would appreciate it very much if, at the earliest opportunity, you could see Mr. Schwab, the head of the Patent Department of the Osram Company, and call his attention to this situation. I explain it in more detail below.

"We do not know exactly what system the Osram Company have in regard to looking over articles by their employees before publication. As you know, we have in this country a rigid routine which provides that all articles written by our employees before publication must be submitted to the Patent Department in order to see that no statements are made which may affect our patent situation. I presume that the Osram Company has a similar routine. In this particular instance, there might be a minor complication in that we have our license under the Schroeder U. S. patent from Krupp. Therefore, it might seem that Krupp should exercise some sort of censorship also. Primarily, however,

Digitized by Google

it seems to me that the Osram Co. Patent Department should be responsible for looking over articles written by its employees.

"Also, when an article is to be published by an employee of one of our Companies in the exclusive territory of another Company, we feel such an article should be submitted to the Company controlling the exclusive territory and receive the approval of the Company controlling the exclusive territory before it is published. Even though the Patent Departments of our different affiliated Companies may realize the possible danger to patent situations in publishing articles, the Patent Department of the Osram Company, for example, is not nearly so well informed as that of the General Electric Company as to what language and what statements may be safely used in connection with articles of the kind mentioned with due consideration of our patent situation in this country.

"We, therefore, feel that the Patent Department of the Osram Company should have submitted the manuscript of this article by Mr. Schroeder to us before it was published in IRON AGE, as mentioned. We also feel that no further articles by Mr. Schroeder, or any other employee of the Osram Company should be published in this country without the opportunity for us to see the manuscript and approve of publication, with or without any comments we may care to make upon it.

"I would suggest that you might also ask Mr. Schwab to take up this matter with the Krupp Company and point out to it the possible danger of publication unapproved by us in this country.

"For your personal information, I would say, as a matter of fact, that we have studied the article in question and do not believe that it will be harmful to us. However, one can never tell whether articles of this kind may not contain statements that will affect our patent situation."

It has been the settled policy of General Electric and Carboloy not to permit infringement suits to proceed far enough to test those pooled patents but rather to settle such actions either by licenses or consent decrees. The obvious result of such a policy was to prevent a judicial determination of the validity of the pooled patents. This policy clearly rested upon an apprehension that the patents were weak and a wholly justified fear and expectation that they would be invalidated if brought to a test. I introduce as exhibit No. 71 a letter dated March 8, 1934, in which Jeffries, now chairman of the board of Carboloy, outlined the Carboloy patent policy to Birge, a General Electric vice president, as follows:

"I have been connected with a number of patent suits during the past two years and have observed a number of others. I have also talked with several prominent patent attorneys. I have in mind, too, the decisions of the Supreme Court during the past four or five years relating to patents. There seems to be a definite tendency to invalidate patents in the courts at the present time. My thought is that the courts will be more adverse to patents rather than otherwise during the forthcoming months * * *.

"The above has a definite bearing on the policy of the Carboloy Company with respect to the prosecution of the Super-Tool suit in Detroit."

He then stated that a "wave of opinion against patents has struck the Federal judges." Other excerpts from the letter are as follows:

"We cannot expect to obtain the best opinion on this matter from outside patent attorneys. I do not mean that we should not seek the advice of our own Patent Department, but patent attorneys who are in business for themselves are not apt to agree with the general proposition that this a poor time to try patent suits. Such an assertion would obviously reduce their fees."

In conclusion, Jeffries recommended that the Eisler Electric Co., the particular new competitor then in question, be brought under restrictive license. He pointed out that it was Eisler who had formerly beaten one of General Electric's patents in a court test and who generally refused to acknowledge and follow General Electric's leadership. He then made the following observation:

"However, it may be better to use the Disraeli method of keeping the suspicious ones close at hand where they can be better watched and, if it is considered desirable that such a plan should be given a trial, I shall be glad to make the approaches and proceed with negotiations."

The General Electric and Carboloy policy of preventing a court test of the patents was not confined to the United States. Obviously any determination in a foreign country that foreign patents corresponding to those pooled by the parties in the United States would be a strong precedent for an American court and a great inducement for potential American competitors to enter the United

Digitized by Google

States market. Efforts have been made, by Krupp in Germany and by General Electric and its associated companies in England, to prevent a judicial investigation into the corresponding patents in those countries. A letter dated December 23, 1935 from Lusk of the British Thomson-Houston Co., to Minor, president of the International General Electric Co., shows that British Thomson-Houston was then being sued by the Krupp interests in England for alleged infringement of a Krupp British patent on tungsten carbide and that negotiations were then in progress looking toward a settlement of the dispute by pooling the patents of those parties, and by price-fixing and quota arrangements. The letter contains the following:

"We are as satisfied as one can ever be in connection with any patent question that the Krupp patent is thoroughly bad and that their action against us has no chance of succeeding. As I have explained, however, on a number of occasions to the Osram people, and as I have also explained to Krupps, we do not wish to see their patent declared invalid, and we have been prepared to do anything which was reasonable to avoid this."

I introduce this letter as exhibit No. 72. Jeffries was in Europe at this time and a letter from Klotzbach, of Krupp, to Jeffries in Paris, January 8, 1936, shows that Jeffries had been using his good offices to negotiate a settlement of the dispute between the opposing interests in England. I introduce this letter as exhibit No. 73.

The first paragraph of this letter is as follows:

"I refer to the conversation we have had last Sunday regarding the British situation. It is true that any weakening of the British patent in suit would be detrimental to the American situation, too. Although according to all information I have obtained relating both to the technical and the legal side of the pending case I feel absolutely confident of an issue of the pending suit in our favor, I agree with you that the matter should be looked at more from the business than from the patent point of view because of the uncertainty which is always involved in an action, and I confirm that I am still prepared to agree to a friendly settlement of the pending suit under the following main outlines which comply with your and Mr. Robbins' suggestions."

General Electric and Carboloy have made inconsistent representations on the scope of certain of the pooled patents from time to time. As against the Fansteel Co., manufacturers of cemented tantalum carbide, Carboloy has contended that the patents in the pool were broad enough to cover tantalum carbide compositions as well as those consisting entirely of tungsten carbide. Indeed, the license agreement between Carboloy and Fansteel is based upon this premise. However, in 1936, when discussions were taking place between Krupp and General Electric with regard to General Electric's obligation to pay increased royalties on products made under the patents contributed by Krupp, General Electric claimed that certain tantalum carbide materials were not covered by the claims of the Krupp patents. I introduce as exhibit No. 74 Jeffries letter to Klotzbach, of Krupp, dated February 13, 1936, wherein he stated with reference to this subject that—

"It is the position of our people that in this field Krupp's patents only provided us partial protection and the Fansteel's patents provided the remainder."

He then stated that pure tantalum carbide materials cemented with nickel were "probably not covered by the Krupp patents." In spite of this obvious fact, General Electric, by the threat that Fansteel's operations would infringe these patents contributed by Krupp, induced the Fansteel Co. to become a Carboloy licensee, and to have its prices fixed by Carboloy, and its production restricted to materials containing at least 17 percent tantalum carbide. The same considerations apply to the titanium carbide patents controlled by the American Cutting Alloys Co., which was brought under control by a similar restrictive license from Carboloy. In the letter from Jeffries to Klotzbach referred to above, exhibit No. 74, the same representation was made by Jeffries concerning the titanium patents as is quoted above with reference to the tantalum patents.

At a meeting of the Carboloy executives which took place from June 27 to July 1, 1938, inclusive, Jeffries, chairman of the board of Carboloy, is quoted as follows in the minutes which were kept of the meeting:

"We should not lean too heavily on patents, since the courts are becoming anti-patent minded and even with strong patents only about half are upheld by the court.

"The main advantage of the patents has been to take Krupp out of this market."

These minutes have heretofore been introduced as exhibit No. 58.

Digitized by Google

The pooled patents disclosed no patentable invention but merely represented improvements in the development of the mechanical skill of utilizing a material and processes already well known

One of the principal reasons for the final invalidation of the principal patents, in addition to the absence of novelty, was the fact that they were held out to disclose sufficient information to enable a man skilled in the art to manufacture the product purported to be covered by the claims. Judge Tuttle, in his opinion, pointed out that while the application for the so-called "basic" Schroter patent was filed in 1923, it was not until 1928 that General Electric introduced the use of the material into its own shops for wire-drawing dies. The letter from Davis, vice president of General Electric, to Burchard, of International General Electric, November 26, 1926, which I introduce as exhibit No. 75, shows that General Electric had then recognized the fact that, as a practical material, tungsten carbide had not yet been "invented." It stated:

"I now learn that we have not yet been able to reproduce such steel [tungsten carbide] uniformly. There is a trick yet to be found out and it may be that this is why Krupp is not yet exploiting it."

A letter from Krupp to General Electric dated September 13, 1927, which I introduce as exhibit No. 76, also shows Krupp's recognition at that time that the work done by Schroter and others in the Osram factories, where tungsten carbide is supposed to have been perfected had merely contributed a beginning in the improvement process. The letter contains the following:

"The hard metal as taken over by us from the Asko was, however, not quite suitable for work where the tools were subjected to hard, rough wear and to shocks. We have improved this metal to such an extent that it can be used for various kinds of work, and it is by far superior to high speed steel and tools made of stellite-like material."

Representatives of parties to the pool realized at the time that they were pooling independent competing patents and that the pooling was not necessary to resolve "deadlocks"

The situation in the year 1928 when the patents were pooled was that tungsten carbide, a substance already known to the art, had been developed and improved in the Osram Lamp Works, in the Krupp Works, and in the General Electric Laboratories. The Krupp and General Electric developments stemmed, independently, from the work of the Osram employees. By this time General Electric and Krupp had each taken out several improvement patents in the United States upon manufacturing processes. The view of certain of General Electric's employees prior to the execution of the patent pooling agreement was that, because some of the Krupp patents were limited in scope, the improvement processes developed by General Electric would permit General Electric to enter into the manufacture and sale of its tungsten carbide independently of the patents originating with Osram and then controlled by Krupp.

I introduce as exhibit No. 77 the following letter dated April 15, 1927, from Lunt of General Electric to Davis, vice president of General Electric, from which I quote as follows:

"Attached you will find Mr. Morrison's report in detail on what, for lack of a better term, I will call the 'Carboloy' situation. The general conclusion which we may draw from this report is that in the process invented by Mr. Gilson of our laboratory we have a process which does not infringe any of the patents already issued on Osram Company applications, nor does it infringe the pending application which we filed and which was not assigned to us. There is, however, some question as to this pending application because, as yet, no claims have been allowed, and we do not know just what will be allowed. It might also be argued that one of the claims of the Baum [hauer] patent might conceivably be said to cover this process though we think it very doubtful; the language of the claim would have to be stretched considerably.

"I think, therefore, that you can tell Dr. Meinhardt that we have a process which, in our opinion, will not come under any of the claims of cases originating with the Osram Company, and on which we expect to get patents ourselves. This process, it seems to me, is very advantageous for manufacturing reasons if for no other. I understand that a body of metal may be pressed up in a very few minutes into completed form. There is some reason to think that the material may also be superior to previous forms of metal of the same general kind."

Digitized by Google

Just 10 days prior to the formulation of the first draft of the Krupp-General Electric pooling agreement, patent counsel for General Electric and Krupp, respectively, appear to have agreed between themselves that the nature of the patents was such that General Electric could have entered the market independently of any license from Krupp. The letter from Morrison, General Electric's patent counsel, to Davis, vice president of General Electric, dated April 7, 1928, which I have already introduced as exhibit No. 67, contains the following account of his discussion with Krupp's patent counsel:

"On Thursday of this week I discussed the Carboloy situation with Mr. Herbert Knight of Knight Bros. at their Washington office * * * I spent considerable time explaining these two patents as well as the various patent applications which we have received from the Osram Company and those which we have filed ourselves. He is convinced, I believe, that our Gilson process may be carried out without infringing any existing patents, also that if Schroter application Serial No. 104,613, which I have filed is allowed the claims therein will be invalid in view of the Schroter patent which covers 10% cobalt. I informed him that the claims in the Baumhauer and Schroter patents while somewhat limited are nevertheless broader than the claims suggested to us by the Osram Company and that we had obtained all the protection to which we believe we were entitled in view of the disclosure given to us. * * *

"* * * He expressed the opinion that the patent situation could be improved by a combination of the interests of the Krupp Company and the General Electric Company but at best it was somewhat loose since we apparently cannot cover an alloy consisting of tungsten, carbon, and cobalt in which the cobalt content is more than 10% of the alloy. You will recall that this is the combination which I have tried to cover in the Schroter application Serial No. 104,613, but which I believe to be invalid in view of the prior Schroter patent. Of course, if a patent can be obtained on an alloy of tungsten, carbon, and cobalt which has 6% and contains no free graphite, such a patent would be very helpful. I do not know that such a patent would be valid but in view of the Schroter patent in which he states that free carbon is desirable, it appears that such a patent might be very useful either to the General Electric or to the Krupp Company."

Certain General Electric engineers were also of the opinion that there was no patent "deadlock" between Krupp and General Electric with relation to tungsten carbide. The letter from W. G. Gartner of General Electric to A. G. Davis, vice president of General Electric, dated August 21, 1928, written 3 months before the execution of the pooling agreement, which I introduce as exhibit No. 78, contains the following:

"Mr. Hawkins told me today that in his opinion the General Electric was making a mistake in not putting Carboloy on the market. We feel that we have a mighty good case to back up the position that hot pressed Carboloy made by Mr. Gilson does not infringe the patents under which Krupp claims rights."

Six months after the execution of the pooling agreement, authorized agents of General Electric in Germany, while endeavoring to induce Krupp to take an exclusive license for certain territories and to pay royalties under General Electric's German patents corresponding to the United States patents General Electric had contributed to the pool, made strong representations that the patents of General Electric were independent of Krupp's and competitive with the products manufactured by Krupp under its developments and the developments of the Osram Co. A "documentary memorandum" dated at Berlin, May 3, 1929, which I introduce as exhibit No. 79, contains the minutes of a discussion between representatives of Krupp and Allgemeine Elektricitaets Gesellschaft, the "German General Electric Co.," which acted as the representative of General Electric in these discussions. I quote from these minutes:

"The A. E. G. stated that, in their opinion, it is to the interest of everyone concerned, that is, to the interest of the A. E. G., G. E., and Krupp, that agreements within the field of 'Hartmetall" be made in the proposed manner. They emphasized that both the G. E. and the A. E. G. hold the viewpoint that the G. E. patents on Carboloy are independent of the Krupp-Osram patents so that, in case no agreements are reached, the possibility exists that Carboloy will be made and sold in Europe in competition with the Krupp 'Hartmetall,' although G. E. and Krupp work together in America in regard to manufacture and sales.

"Director Preussing admitted that, even though the Krupp Company doubts the independency of the G. E. patents, the possibility exists of such a competition, and of the undesirable consequence that resultant patent proceedings ensue; but

Digitized by Google

he added that he cannot present the basic standpoint of the Krupp Company, as to whether or not the closing of an agreement appears appropriate to them, until the technical experts of Krupp Company have made comparative tests with Carboloy and Krupp 'Hartmetall.' In view of the fact that, according to Director Preussing, such comparative tests at Krupp's have not yet been made, notwithstanding the agreement which has already been negotiated between Krupp and G. E., it was agreed that Krupp as soon as possible shall give the A. E. G. an order for Carboloy samples in a sufficient quantity to make the tests. The A. E. G. will obtain the Carboloy from the G. E. and will otherwise assist in the making of these tests on the basis of their experiences with Carboloy and Krupp-Osram metal.

"Director Preussing stated that Krupp will not present any opposition against the applications filed by the A. E. G. for 'Hartmetall' alloys, not even before the actual contract negotiations are stated.

"The A. E. G. emphasized that, according to their experience, the properties of Carboloy and Krupp-Osram metal are not identical and that Carboloy offers advantages for many applications."

Under the cartel agreement Krupp has been kept informed of United States production of tungsten carbide

Four times each year since 1929, General Electric has submitted a "royalty report" to Krupp which has supplied Krupp with information as to the volume of tungsten carbide manufactured and sold by each of the several manufacturers in the United States producing under the patents covered by the pool. Moreover, since July 1, 1936, General Electric has reported to Krupp in addition the dollar volume of sales of hard metal composition by itself and the Carboloy Co. This was done because since that time it has been the obligation of General Electric and Carboloy to pay a royalty to Krupp in the amount of 10 percent of their net sales. I introduce as exhibit No. 79a, a cumulative royalty report to Krupp prepared by Carboloy which covers figures from the beginning of the Carboloy's operations until the end of 1939. I introduce as exhibit No. 79b, a sample of the type of royalty report submitted quarterly to Krupp since July 1, 1936, in which the amount of sales in dollars is also indicated.

The tungsten carbide industry in England was also controlled by a similar cartel agreement based on British patents corresponding to the United States patents in spite of the fact that the British company which entered the cartel believed the Krupp patents invalid

The tungsten carbide industry in England has also been a branch of the worldwide cartel and somewhat similar restrictions have been imposed. Krupp became actively interested in the British tungsten carbide industry when it set up its Tool Metal Manufacturing Co. in Coventry as the producing and licensing instrumentality under the Krupp British patents. A complication developed, however, when Krupp's rival in Germany, the Deutsche Edelstahlwerke, a satellite of the great Vereinigte Stahwerke, A. G., and the owner of British patents on titanium carbide entered the English market in competition with Krupp, by setting up a concern known as Cutanit, Ltd., which engaged the British Metropolitan-Vickers Co. as its manufacturing agent. A dispute arose when Krupp's company, the Tool Metal Manufacturing Co., was negotiating with British Thomson-Houston Co., a concern in which General Electric is substantially interested, to get British Thomson-Houston to accept a restrictive license agreement under the Krupp British patents. British Thomson-Houston appeared to be unwilling to accept such a license on Krupp's terms for two reasons: (1) because it believed Krupp's patent position to be "thoroughly bad" and (2) because it was unwilling to act for a number of its associated companies, including Metropolitan-Vickers. I quote again from a letter dated December 23, 1935, from Lusk of British Thomson-Houston to Minor, president of International General Electric, which I have already introduced as exhibit No. 72:

"We are as satisfied as one can ever be in connection with any patent question that the Krupp patent is thoroughly bad and that their action against us has no chance of succeeding. As I have explained, however, on a number of occasions to the Osram people, and as I have also explained to Krupps, we do not wish to see their patent declared invalid, and we have been prepared to do anything which was reasonable to avoid this."

Digitized by Google

The letter from Klotzbach of Krupp to Jeffries of Carboloy, dated January 8, 1936, which I have already introduced as exhibit 73, shows that Jeffries had intervened to help settle this dispute, a settlement of which would prevent a threat to the British patents and through them to the corresponding patents of the United States. I quote the first paragraph of that letter:

"I refer to the conversation we have had last Sunday regarding the British situation. It is true that any weakening of the Britsh patent in suit would be detrimental to the American situation too. Although according to all information I have obtained relating both to the technical and the legal side of the pending case I feel absolutely confident of an issue of the pending suit in our favour, I agree with you that the matter should be looked at more from the business than from the patent point of view because of the uncertainty which is always involved in an action, and I confirm that I am still prepared to agree to a friendly settlement of the pending suit under the following main outlines which comply with you and Mr. Robbins' suggestions."

Klotzbach's letter to Jeffries, March 26, 1936, shows that the negotiations between Krupp and British Thomson-Houston had broken down in a disagreement regarding the inclusion of Metropolitan Vickers in the production quota to be allowed to British Thomson-Houston. I introduce this letter as exhibit No. 80. A cablegram from Minor, president of International General Electric, to Jeffries, April 7, 1936, shows that the reason for Vickers' reluctance to agree to the terms of the proposed restrictive license was that it had been indemnified against all patent infringement liability presumably by Cutanit, Ltd., for whom it was manufacturing. I introduce this cablegram as exhibit No. 81. On April 14, 1936, Jeffries wrote to Minor, outlining his understanding of the entire British situation and suggesting various bases for the settlement of the dispute. Klotzbach's letter to Minor, June 27, 1936, shows that an effort was still being made to continue the negotiations. I introduce these letters as exhibits No. 82 and No. 83. The memorandum by Scudder of International General Electric, dated October 6, 1939, is an indication that an agreement was finally reached. In this memorandum Scudder stated "I understand that BTH Co. and Krupp have an agreement." I introduce this memorandum as exhibit No. 84.

The Krupp subsidiary in England, the Tool Metal Manufacturing Co., made its product from tungsten carbide powders imported from Germany. After the outbreak of the present war, therefore, its supplies from that source were cut off and it became necessary for it to obtain a new source of tungsten carbide powder. On November 22, 1939, Eveleth of General Electric stated in a memorandum that a representative of Krupp's former subsidiary in England had approached the Carboloy Co. in an effort to obtain supplies of tungsten carbide powder. I introduce this memorandum as exhibit No. 85. The memoranum indicates that plans were being made to supply such powders and that an arrangement would be made with British Thomson-Houston by which that company would receive a share of the profit on this transaction. These negotiations precipitated the situation in which the British Thomson-Houston Co. apparently placed its business affairs above the national interests of the United Kingdom and at a time when the future of that Kingdom looked very dark indeed.

A letter which I introduce as exhibit No. 86 is from Sporborg of British Thomson-Houston to Herod of International General Electric, dated March 30, 1940. It contains the following:

"We wanted to let you know that our relations with him are entirely friendly, and it is quite possible that we shall cooperate with him more closely in the future than we have done in the past, but so far we have not entered into any definite arrangements with him, nor have we arrived at a stage where we are prepared to exchange technical information with his Company.

"You will remember that under the old arrangement they obtained their raw material from Krupp and fabricated their tips in a factory at Coventry. Under present conditions, of course, that could not go on, and they are now obtaining their raw material in this country and doing the fabrication as well, but we have not yet decided to enter into a full exchange of technical information with them."

On May 24, 1940, in a letter which I introduced as exhibit No. 87, Herod replied to Sporborg to the effect that the Tool Metal Manufacturing Co., representative, Wickman, had discussed with Carboloy the question of an exchange of technical information between the two companies. Herod expressed the thought that Carboloy was in favor of making the proposed arrangement because it felt

Digitized by Google

that such an exchange would be mutually profitable. The letter also points out that the Wickman interests had bought the Krupp patents in England and the result was that the Krupp interests in England had been disposed of entirely. The following quotation then appears:

"Likewise, I pointed out to Mr. Wickman that we here in the United States were still under a license arrangement with Krupp and that such involved not only the United States but also certain limited export territories, and that we naturally were not disposed to prejudice our license arrangements with Krupp through any other deal at this time; * * *"

On June 6, 1940, Herod informed Robbins, president of Carboloy, that the final decision on the question of an exchange of information between Tool Metal Manufacturing Co. and Carboloy depended upon the desires of British Thomson-Houston. I introduced this letter as exhibit No. 88.

The Government has no additional information as to whether or not the agreement contemplated here was ever made. It is interesting to note, however, that the letter from Herod to British Thomson-Houston, dated May 24, 1940 (exhibit No. 87), states that an exchange of technical information between the two companies would undoubtedly be mutually profitable because Tool Metal Manufacturing Co. was in a position to make a contribution on the subject of steel cutting, on which subject Carboloy knowledge has always been woefully weak, and that the English company desired to receive information relating to making extrusion dies of tungsten carbide such as are used for stamping out shell casings, for rifle and artillery ammunition. It is obvious that such information would have been useful in England in the spring of 1940.

It is true that in many ways production has been more vigorously exploited in England than in the United States. Price and production figures which are available tend to show that the situation there is more favorable to production. Lower prices there have brought forth larger volume.

On the subject of the organization of the tungsten carbide industry within England, I introduced as exhibit No. 89 and quote from a letter from Chapman of British Thomson-Houston to Robbins of Carboloy, dated May 2, 1939, which explains the pricing system used in that country and contains, in addition, the following information:

"In order that you may have a picture of the present conditions over here I would ask you to note that we have, including ourselves, six manufacturers of hard metal, and these, together with their distributors, have recently formed an association which we call The British Hard Metal Association, the main object of which is to avoid wasteful competition amongst its members and to maintain agreed selling prices and conditions, and generally take whatever action is deemed advisable in regard to matters of general interest to the members of the association."

Subsequently a graph was prepared by Carboloy comparing American and British price levels. An examination of this graph shows that a medium-sized piece of tungsten carbide, weighing 10 grams, was priced in England at 20 cents for all quantities and that the cost in the United States was materially higher to all but a handful of very large purchasers; that in quantities of from 1 to 49, the price was 45 cents per gram; that in quantities of from 50 to 99, the price was 38 cents per gram; that in quantities of 500 to 999, the price was 25 cents per gram; and that in quantities of 3,000 or more the price was 11.3 cents per gram. I introduced this graph as exhibit No. 90.

The Union Wire Die Corporation

Stearns' letter to Krupp, February 21, 1929, which I introduced as exhibit No. 91, is with reference to the prices to be used by the Union Wire Die Corporation in its sales in the United States. Stearns argued that the agreement between General Electric and Krupp, although executed on November 5, 1928, was made effective as of April 17, 1928, and therefore that the contract between Krupp's associated company, the Wallram Co., and the Union Wire Die Corporation, being date in July 1928, was subject to the provisions of the Krupp-General Electric agreement. He then stated:

"In view of the above fact we shall have to ask the Krupp Company to make such arrangements with the Union Wire & Die Company as may be necessary to carry into effect this provision of our agreement; namely, that the Union Wire & Die Company shall sell, in the United States, dies made up with the use

Digitized by Google

of hard metal composition, at prices, terms, and conditions of sale fixed by the General Electric Company or its exclusive licensee, the Carboloy Company."

Stearns' letter to Krupp, April 27, 1929, which I introduce as exhibit No. 92, reports on his conference with Simons president of the Union Wire Die Corporation, with reference to the prices to be used by that company in its sales. The letter includes the following:

"I showed Mr. Simons the last paragraph of Article IV of the Krupp-General Electric Agreement, under the terms of which the Krupp Company agreed that "hard-metal composition of its manufacture which is imported into the United States, either directly or through the Wallram Company whether in the form of tools, dies, or parts thereof will be sold in the United States at prices not lower than the minimum price prescribed by the Licensor and on terms and conditions of sale, no more favorable than those prescribed by the Licensor," and asked Mr. Simons if he would recognize the right of the Carboloy Company to fix these prices.

"It was evident from my conversation with Mr. Simons that he did not care to recognize the right of the Carboloy Company to fix these prices.

"You will recall that it was at the urgent request of the Krupp Company that the General Electric Company finally agreed that hard-metal composition in the form of tools or dies would be sold in the United States at prices, terms, and conditions of sale which would be fixed by the General Electric Company and it, therefore, makes it extremely difficult for us to straighten out the situation with the Union Wire & Die Company without your assistance.

"I would therefore request your company to notify the Union Wire & Die Company that under the terms of the contract between Krupp Company and the General Electric Company, the Union Wire & Die Company are obliged to conform with the terms of this contract as far as prices, terms, and conditions of sale are concerned.

"Will you please give this matter your immediate attention and notify me by cable when you have sent word to the Union Wire & Die Company?"

General Electric made this attempt to fix the prices of the Union Wire Die Corporation, although Simons' contractual rights from Krupp were prior in point of time to those of General Electric and General Electric had notice of this fact. The "Memorandum Covering the Tentative Agreement Between the Representatives of the General Electric Co. and the Krupp Co. with Reference to Carboloy," April 17, 1928, which has heretofore been introduced as exhibit No. 17, concludes with the following:

"It is understood that the above tentative agreement is merely an expression of principles agreed upon by the parties present and in no way binds the General Electric Company and the Krupp Company."

Krupp's letter to General Electric, dated June 14, 1928, which I introduce as exhibit No. 93, contains the following:

"One of these reasons is that Dec. 1925 we entered into an agreement with the 'Gewerkschaft Wallram' in Essen to supply them with Widia material for the manufacture of wire-drawing dies. This contract empowers the above concern to export such dies to all countries. As a matter of fact, the Wallram Company furnish wire-drawing dies to various concerns in the United States and there is no possibility to compel the Wallram Gewerkschaft to desist from such exportation.

"Moreover, we have told you that we supply, since the beginning of this year, an American concern, with Widia material for the manufacture of wire-drawing dies, and this concern lays great stress upon receiving their material from us, now as well as in future. In fact it intends to sign a contract for the permanent importation of large consignments of dies. We think it would be very wrong to incur the ill-feelings of this customer who has become used to our material, and has collected experiences with it, by cutting off its source of supply."

Krupp, however, refused to recognize that the contract rights of the Union Wire Die Corporation were subordinate to those of General Electric, and in its letter to General Electric, dated October 14, 1929, which I introduce as exhibit No. 94, there is contained the following:

"This agreement which we made with Mr. Simons does in no way influence the contract between you and us. In Article 2 of the just-mentioned contract, section 1 expressively states:

" 'The present agreement is subject to the aforesaid agreement and to all existing other agreements which the Krupp Company has made prior to the date of the agreement.'

Digitized by Google

"After our contract with the Union Wire Die Company had been made, this firm has made a contract with the Gewerkschaft Wallram in Essen, which also has a right to exporting our 'Widia' drawing dies (compare article 2, section 1, of the Krupp-G. E. Company contract), in which last-mentioned contract the Gewerkshaft-Wallram has assigned its right of selling 'Widia' drawing dies in America to the Union Wire Die Company. After the Gewerkshaft Wallram had sold its right to the Union Wire Die Company we made a new contract with the Union Wire Die Company on the 7th of July 1928, from which we cite:

" 'Krupp undertakes to supply Rough Blanks for Drawing Dies of Widia or of similar metals for the sale in the U. S. A. exclusively to Mr. Simons, whereas Mr. Simons undertakes not to buy or sell any other metals as above than those manufactured by Krupp and the Gewerkschaft Wallram.

"Mr. Simons undertakes not to sell Dies of Widia or similar metals supplied by Krupp or Gewerkschaft Wallram for drawing metal filaments of incandescent electric lamps.'

"As you can see from the above, the Union Wire Die Company sells our Widia drawing dies in the United States, based on the rights which the Gewerkschaft Wallram had according to the contract and as recognized by you. The fact that we recognized this right which was given by the Gewerkschaft Wallram to the Union Wire Die Company, as an exclusive right, by our contract of the 7th of July has no influence on the legal relation between you and us and between you and the Union Wire Die Company.

"Our contract with the Union Wire Die Company does not contain any agreements with regard to the selling price. We could not make such conditions as the right which the Union Wire Die Company obtained from the Gewerkschaft Wallram did not have such condition. For the rest we did not have the duty to make such conditions on the 7th of July 1928 as the contract Krupp-G. E. Company did not yet exist. When this contract was made on the 5th of November 1928 it was besides mentioned in article 2 of the contract that all the contracts which existed before the date of the Krupp-General Electric Company contract therefore previous to the 5th of November, were not influenced by the contract Krupp-General Electric Company. We assume that these explanations have convinced you that we are not able to force the Union Wire Die Company to sell at prices determined by you, and that we also have no duty in this respect. Further, we will once more call attention to our letter, P. B. Nr. 2534A of March 18, 1929, in which we informed you that the Union Wire Die Company is ready at any time to come to an agreement with you concerning the prices on drawing dies. The Union Wire Die Company makes only the condition that the prices which are to be determined will not make the sale of drawing dies difficult in an unjust manner for the Union Wire Die Company or even make the sale impossible, and that you will not try to force the Union Wire Die Company from the American market by means of price scale.

"We hope that we have now sufficiently explained the Union Wire Die Company's objection and that you will regulate the question of drawing dies in a sensible manner with the Union Wire Drawing Die Company in your own interest. At the same time we confirm the receipt of your letter of the 23rd of August and the enclosures of the 28th of August.

General Electric, however, did not give up so easily its efforts to control Union Wire Die Corporation prices. A letter from Mallory, president of Carboloy, to Swope, president of General Electric, dated June 18, 1931, which I introduce as exhibit No. 95, contains the following:

"Sales of our Die Division have since inception been hampered by the activities of the Union Wire Die Corp.—Krupp's agent on this product in the United States. Although Krupp, in their original contract with the General Electric Company, undertook the responsibility of having Krupp's agent sell at prices, terms and conditions of sale as established by the Carboloy Company, we have never been able to bring the Union Wire Die Company under control. A great deal of time and money has been expended in the effort to accomplish this result. Mr. Stearns and Dr. Jeffries made a special trip to Europe in the Winter of 1930 looking to that end. Nothing definite resulted. Since that time a great deal of the time of our attorneys as well as myself, has been devoted to the solution of this problem which has interfered materially with our Die sales. After protracted negotiations this matter seems as of June 1st to be in as satisfactory shape as possible under existing conditions although not as satisfactory as if the contract terms had been adhered to by Krupp. As a result our Die Division is on a more substantial basis for favorable competition than ever before and should now begin to produce substantial sales volume."

Digitized by Google

Stearns' letter to Buck, March 20, 1931, which I introduce as exhibit No. 96, describes a conference which had taken place between representatives of Krupp and General Electric. The following appears:

"With reference to the Union Wire Die situation I presented proof that Mr. Simon was not selling dies in the United States at prices, terms and conditions by the Carboloy Company, and that *while I realized the General Company had no authority over the prices at which Mr. Simon sold this* material, *we did hold Krupp responsible* for the maintenance of prices on dies by Simon in accordance with the terms of the main agreement. Dr. Louis and Mr. Arzt after some discussion among themselves made the positive statement that they would see that Simon sold dies in the United States at prices established by the Carboloy Company."

The following memorandum written by Robbins, which I introduce as exhibit No. 97, is also of great interest at this point:

"Memorandum of conversation with Mr. Morris Simons of the Union Wire Die Corporation at Union Wire Die offices in New York City on June 16, 1933.

"The purpose of this discussion was to determine whether or not the Union Wire Die Company was selling dies to National Tube Company at a discount of 20% from the Carboloy Company Die Manual prices. Mr. Simons was asked if the Union Wire Die Company sold dies to National Tube at list prices less 20%. Mr. Simmons said that no such sale at that discount or any other discount from the manual prices had ever been made to National Tube Company. To substantiate this fact he produced the request for quotation received from National Tube Company under date of May 4th calling for a quotation on 6 tube dies. He also produced his quotation calling for these dies, quoting on them at the manual prices. The quotation did not, however, quote on the specifications given by National Tube in all instances. This quotation was on finished dies only. He then produced a quotation quoting on rough nibs in cases along with a letter to Mr. H. L. Boder, Purchasing Agent of the National Tube Company, Pittsburgh, stating that if they chose to purchase the dies listed on their quotation as finished dies in the form of rough nibs in cases the new quotation attached to the letter would apply.

"I asked Mr. Simons if either of the quotations had resulted in an order from the National Tube Company. He stated that they had not received either order from National Tube Company. I then told him that we had information to the effect that the National Tube Company Mill people at Elwood Works, Elwood City, Pa. were given information by the Purchasing Department in Pittsburgh that the Union Wire Die Company's first quotation on finished dies carried a discount of 20%. (Mr. Beardslee saw this written at the bottom of the prices submitted to the Mill people at Elwood City. It read as follows: 'Deduct confidentially 20% discount from all of the above prices.')

"Mr. Simons flatly denied that the Union Wire Die Company had quoted any such discount to either Elwood City or Pittsburgh.

"I then asked Mr. Simons if he had a contract with the United States Steel Corporation under which all subsidiaries of the United States Steel Company could buy dies at a discount from the manual prices. He emphatically stated that he had no such contract, further, that he contemplated no such contract.

"I then asked Mr. Simons if he had a contract with the Anaconda Wire & Cable Company and the American Brass Company. He stated that the had such a contract but that that contract was set up on the basis of the quantity purchased, the discount depending upon the amount of materials purchased in dollars with no time limitation set on when such quantities of dies in dollars should be purchased. He declined to tell me when this contract was dated or when it would expire. He said that the contract was still in existence and that he was disappointed that it had not expired. He further stated that when it did expire it would not be renewed and he had so informed Anaconda and American Brass.

"Considerable discussion ensued concerning the verbal agreement made by the Carboloy Company and the Union Wire Die Corporation before May 15, 1932. Mr. Simons' understanding of this agreement agreed with mine in that all contracts relative to the leasing of dies and any other contracts with die users entered into prior to May 15, 1932, could be performed in accordance with their terms but could not be extended.

"I then asked Mr. Simons if he had a contract with American Steel & Wire Company granting them in any way a discount from the Carboloy die manuel

Digitized by Google

prices. He admitted that such a contract was in existence. I asked him when this contract was signed. He declined to tell me when it was signed but admitted that it was signed prior to May 15, 1932. I then informed him that he had agreed with us prior to May 15, 1932, that no contracts with the exception of Anaconda and American Brass which were already in existence would be signed by the Union Wire Die Corporation excepting contracts for the leasing of dies which had already been submitted to customers. He told me at that time that there were four or five such contracts, two of which he expected to close.

"I told him very frankly that I looked upon his signing of the American Steel & Wire contract as a breach of our verbal agreement. He denied this and said that his understanding of the agreement dealt with contracts of all types rather than leasing contracts.

"I then asked him if the contract granted 20% preferential discount over the manual prices. He denied that the discount was literally 20%. I then asked him if the 20% discount applied to only finished dies. He agreed that this was the discount in the contract.

"I then asked him if the American Steel & Wire contract also called for the regular monthly discounts as listed in the manual. This he did not definitely answer except to say that he had never sold them sufficient dies to grant the maximum discount of 20% on any one order.

"I then told him that National Tube Company must have purchased their dies through American Steel & Wire Company. He admitted that I had guessed correctly and stated that it was not in intention when the American Steel & Wire Company contract was signed that all of the subsidiary companies of United States Steel Company should come under this contract. He refused, however, to change the arrangement.

"I then served notice on Mr. Simons and the Union Wire Die Corporation to the effect that the Carboloy Company and its Licensees were completely through with dealing with him on any basis which would in any way give him a price advantage on the sale of dies of any class to any customer. He stated that he had to have such an advantage to cope with the reciprocal position of the General Electric Company with certain large steel companies. I told him that regardless of reciprocal relations or anything else our prices were going to meet his prices one way or another.

"I further informed Mr. Simons that the Carboloy Board had agreed to proceed with arbitration under the terms of the Krupp-G. E. agreement to determine whether Mr. Simons' contract with Krupp came under the stipulations of the G. E.-Krupp agreement. To this he answerd that he was more anxious to see the contract arbitrated than we were to arbitrate it. He gave no reason for this statement.

"I then told Mr. Simons that we were in position to drop our prices 40% if need be to compete with him on his preferential discount arrangements. He said he would call such action suicide on our part. After a long discussion as to the result of our lowering the price generally Mr. Simons admitted that our prices to large consumers should be the same as his. He then asked me how this could be accomplished.

"I gave him the following four alternatives:

"(1) That all of his existing contracts of that nature should be cancelled.

"(2) That the prices agreed upon in these contracts should be raised as much as possible and that Carboloy Company and its licensees should meet the new prices to the large users.

"(3) That the present contracts should stand to their expiration date and that the contracts would be granted by the Carboloy Company and all of their licensees.

"(4) That the Carboloy Company and their licensees should meet the situation by a general price reduction sufficient to enable them to get business independent of the Union Wire Die Corporations' prices.

"Mr. Simons stated that he was in favor of raising the prices under the existing contracts as listed above in alternative 2. He stated that he would have to confer with his attorneys before giving me a definite answer in this respect. I then told him that under any arrangement whereby we would continue to cooperate with him on prices it would be necessary for him to lay on the table for our inspection all of his existing contractual relations including leases, and in the event of any agreement he would have to give us in writing a statement to the effect that such contracts exhibited comprised all of the contracts now

Digitized by Google

in existence by the Union Wire Die Company and that no future contracts would be made. This he would not agree to.

"I told him that he would have to answer this matter to me by Friday, June 23d. He promised definitely to give me information pertaining to the way he intended to handle this matter before that date."

Subsequently in 1936 when General Electric was endeavoring to induce Krupp to withdraw from the American market, General Electric found it necessary, in order to persuade Krupp to enter into a contract, to satisfy Krupp's contractual obligation to the Union Wire Die Corporation. In order to induce Union to relinquish its rights to do business, concerted action was taken by General Electric and Krupp. In the letter from Krupp to Robbins, president of Carboloy, October 22, 1936, which I introduce as exhibit No. 98, it is shown that Krupp had suspended shipments to the Union Wire Die Corporation alleged because payments for previous shipments had been withheld. The letter contains the following:

"Our new prices have been so arranged that they are not below half of your list price less 30% for freight, duty, insurance, etc., which Simons has to bear himself, consequently, he isn't under any circumstances better off by buying from us than ordering from you according to your offered arrangements. We couldn't however, enforce your demand to use the list price of the next larger size of all intermediate sizes of your manual as long as the intermediate size deviated only slightly from the next smaller size. In this case we arrived at a medium price. The result of our negotiation has been established in a contract, of which we enclose a copy for your information. At the same time we enclose a copy of a writ, describing the changes in the contract, which Simons requested. Inasmuch as these alterations increase the total shipments up to July 7th of next year only 13 kg. we have approved these reforms. As you will note from the contract, Mr. Simons intends to reorder for the time being the small quantity of 20 kg. For the remainder of the quantity as arranged in the Schedule attached to the contract he only wants the assurance that we supply them for the agreed prices. From this and from the conduct of the negotiations in general we have come to the opinion that Simons intends to negotiate anew an understanding with you, but first wanted to secure a supply from us. For this reason and in order not to render more difficult any future negotiations for you we have not granted any more concessions than circumstances compelled us to. The original of the enclosed contract we have sent to Messrs. Briesen & Schrenk, 49 Wall Street, New York, along with our agreement and a copy of Mr. Simon's enclosed letter and have asked Messrs. Briesen & Schrenk to have the contracts endorsed by Mr. Simons, issue a contract and hand him the enclosed letter which is part of the agreement.

"We have just learned from Mr. MacKenzie that you have planned to reduce prices for dies. If this reduction or the intentions for one become known to Mr. Simons it is to be expected that he will refuse to sign our contracts and that he will demand a price reduction from us accordingly. Provided a reduction in die prices will go into effect after Simons has signed the contracts he no doubt will be more inclined to reach an agreement with you, because he will, under the recently offered agreement, i. e., 50% off list prices, buy more favorably from you than from us according to the agreed prices. We cabled you therefore as follows:

" 'For Robbins have negotiated with Simons re further shipments till July next Stop Respective contracts mailed today for his signature Stop Before doing anything await our detailed informatory letter please inform Jeffries.

'Louis.'

"As soon as Mr. Simons has signed the contracts we will without delay inform you and kindly ask you to also keep us informed of your negotiations with Simons.

"We are sending a copy of this letter direct to Dr. Jeffries for his information.

"We pray to keep the foregoing subject strictly confidential and not use any of it in negotiating with Simons."

Negotiatons between Carboloy and Simons, president of Union Wire Die, continued for some time and on April 2, 1937, Robbins, of Carboloy, wrote to Louis, of Krupp, and reviewed the various plans which had been discussed in the course of these negotiations. The last three paragraphs of this letter are as follows:

"After all of the discussions on the various propositions mentioned herein Simons has made many threats. For example, he threatens to infringe and con-

Digitized by Google

tinue business; he threatens to manufacture tool material on an infringing basis and insofar as he can, upset the tool market; he threatens to sell all of this stock to several of the large users and retire from business, and many other threats.

"Now, in definite answer to your letter of March 9th we do not feel that an extension of any type whatsoever of this agreement between yourselves and Simons would do anything other than to complicate our problem, consequently, we will flatly refuse any such request. Rather, we would counsel you to strongly bring as much pressure as possible on Mr. Simons to keep the material covered by the contract out of the United States. We feel that you have means by which this can be accomplished. Mr. Simons is now contemplating a trip to Paris to meet with you in which we know that he will make many lucrative offers to get this contract extended or to get it revised in some manner. Our position in this matter is as above stated, namely, that you must not only refuse to extend his agreement or to revise it in any way, but that you should also bring all possible pressure to bear on Mr. Simons under the agreement.

"This has been a hard matter to cover by correspondence, but I believe that I have covered the main points. I will be pleased to advise you of any further developments in this matter which would be of interest to you."

(Introduced this letter as exhibit No. 99.)

Thereupon, on the day which marked the termination of the 3-year purchase contract between Krupp and Union, July 7, 1937, an agreement was made between Carboloy and Simons, president of Union Wire Die, under which Carboloy purchased the business of Union for approximately $950,000. At the same time Simons was placed upon the Carboloy pay roll as a consultant at an annual salary of $5,000 per year and Simons agreed that he would not engage in the tungsten carbide business during the term of his contract of employment.

Vertical price maintenance

The result of the patent pool and the license agreements subsequently made was that the prices charged in the United States by substantially all manufacturers were at the same level. Not being content with this type of horizontal price fixing, General Electric and Carboloy have continuously followed a policy requiring vertical price maintenance as well. This has been done through the medium of "agency" contracts entered into between Carboloy, its licensees, and the American dealers of Krupp, with the machine tool builders and the manufacturers of small tools embodying tungsten carbide. It is not my purpose in these hearings to explain in any great detail the reasons why the "ostensible" contracts of agency were inadequate, we believe, under the law to make the tool manufacturers the true agents of the Carboloy Co. or any of the other manufacturing licensees. It is rather my purpose merely to touch upon this issue and briefly to point out some of the evidence which tends to show that the aforesaid agency contracts did not represent or truly describe the actual course of dealing between these purported principals and their so-called agents. On November 14, 1928, Stearns, of General Electric, wrote to Jackson, of the General Electric law department, as follows:

"You will recall that I recently asked you if it would be possible, in any way, for the Carboloy Company to control the prices at which tool makers purchasing carboloy from the Carboloy Company and using this carboloy in the manufacture of complete tools would be required to maintain prices, terms, and conditions of sale fixed by the Carboloy Company.

"At the time I asked you this question, you stated that you thought some method might be worked out whereby this could be done."

I introduce this letter as exhibit No. 100.

Apparently, in connection with the above request, the following statement was made by Rich, of the General Electric patent department, to Buck, also of the patent department, dated November 22, 1938:

"The only way I can see of the Carboloy Company handling the tool situation, about which you spoke to me, is for the tool manufacturer to sell to the Carboloy Company the shanks or holders, the Carboloy Company then to manufacture the Carboloy portion of the tool, mounting the same on the shank or holder and appointing the manufacturer of the shanks as to the agent of the Carboloy Company for the sale of the complete tool, only at such prices, upon such terms, and under such conditions as may be established by the Carboloy Company from time to time.

Digitized by Google

"I have talked to Mr. Bayard about this, and from his study of the law he sees no objection to it. Mr. Bayard and I do not see any other way of the Carboloy Company furnishing the completed Carboloy portion of the tool and fixing the prices at which the complete tool can be sold."

I introduce this letter as exhibit No. 101.

The following excerpts from Carboloy's correspondence tend to show the manner in which the purported contracts of agency were observed by Carboloy and its so-called agents. On May 1, 1934, Peterson, of Carboloy, wrote to Robbins, president of Carboloy, as follows:

"I contacted Heald Machine Co. last week with Macduff and Mr. Bestick is reluctant to sign the contract in its present form only for the reason that it states that they are to make a report on all material drawn out of their inventory. I told him that this clause was only put in there for people that might want to carry a consignment under this contract, but in their case where it is all paid for as purchased that it would not be necessary for them to make any reports, but to cover himself he asked for a letter from you stating that it would not be necessary for them to make the monthly report due to the fact that all their tools and tips were bought outright, so I would ask that if this is in order that you write a letter to the attention of Mr. G. C. Bestick so as he can pin this to his copy of the contract."

I introduce this letter as exhibit No. 102.

Robbins' reply, dated May 8, 1934, was as follows:

"Under the new arrangement it will be necessary for Heald to make a monthly report. If it is the desire of the Heald Company to remit at the end of each month for all materials purchased during the month this form will simply list the purchases made during the month and be attached to their remittance.

"I am sure that you understand the consignment arrangement—namely, all merchandise is supplied by us on consignment whether it happens to be an actual physical consignment or not. In most cases we do not have a physical inventory in the Agent's plant, nevertheless, all goods are shipped on consignment. This is the only way in which the price can be maintained by us.

"I would much prefer not to write a letter to Mr. Bestick on this matter if there is any way of your getting it straightened out. I feel sure that if you will explain the matter to him in this light I am sure he will be satisfied to go along under the new arrangement."

I introduce this letter as exhibit No. 103.

On occasion the holders of these so-called agency contracts objected to the amount of extra bookkeeping and reporting which was required by the terms of the contracts. The following excerpt from a letter from Fullagar, of the Carboloy Co., to Robbins, dated August 2, 1935, with reference to the Barber Colman Co. of Rockford, Ill., a large machine tool manufacturer, is pertinent on this point.

"I believe that this account could be handled much the same as the Ingersoll Milling Machine Company, that is, Ingersoll refused to make up their monthly statement, also they will not write up their regular CR requisition. Both of these functions are handled by us in this office. We write up the monthly statement and send it to them each monh; also, we accept their regular purchase order and transfer its contents to our regular CR requisition, which is returned to Ingersoll for signature, and, so far, everything has worked beautifully, and I think we will have to handle Barber Colman the sume way providing you pass on the deletion of paragraph 22."

I introduce this letter as exhibit No. 104.

The relationship between Carboloy and its various so-called agents is so much like that of vendor and purchaser that the officials of the Carboloy Co. itself often, in unguarded moments, refer to these people as "purchasers" and the transaction between the so-called agent and the ultimate consumer as a resale. For example, in identical letters to the Warner & Swasey Co. of Cleveland, April 20, 1934, and the Jones and Lamson Machine Co. of Springfield, Vt., April 17, 1934, which letters were apparently sent to all holders of Carboloy Form E contracts, the following appears:

"This Appointment of Agent supersedes all other agreements in existence by the Carboloy Company and we are sure that in offering this to you we are giving you a far more desirable *resale* arrangement than you have been able to secure heretofore." [Emphasis supplied.]

I introduce these letters as exhibits Nos. 105 and 106.

Digitized by Google

Also, for example, in Robbins' letter to Van Norman Machine Tool Co., January 14, 1935, with reference to certain tungsten carbide sold by Carboloy to a particular company, the following appears:

"At the time that material was sold by us we naturally presumed that it was for their own use since, as you know, we do not sell Carboloy to anyone for *resale* except under agency agreements such as you operate under." [Emphasis supplied.]

I introduce this letter as exhibit No. 107.

In W. G. Robbins' letter to Fred Robbins, January 14, 1935, the following appears:

"For your information, the set-up is as follow: First, we are not permitted to *sell* Carboloy for *resale* without the signing of one of our *resale* agreements. Second, all of the people supplying boring bars and tools for boring cylinders have signed such contracts. By signing the contract they are legally bound to resell Carboloy tools at prices prescribed by us." [Emphasis supplied.]

I introduce this letter as exhibit No. 108.

Reference should also be made to the excerpt from the letter from Stearns to Jackson, dated November 14, 1928, as follows:

"You will recall that I recently asked you if it would be possible, in any way, for the Carboloy Company to control the prices at which tool makers *purchasing* carboloy from the Carboloy Company and using this Carboloy in the manufacture of complete tools could be required to maintain prices, terms and conditions of sale fixed by the Carboloy Company."

"At the time I asked you this question, you stated that you thought some method might be worked out whereby this could be done." [Emphasis supplied.]

I have heretofore introduced this letter as exhibit No. 100.

Price fixing of unpatented tools

Tungsten carbide is never used alone but is always attached to a tool for which it is used as a cutting edge. The hard-metal composition constitutes only a small part of the weight of a typical metal-cutting tool. It is also true that the relative proportion of values to be attributed to the patented and unpatened parts of such a tool shows a like disparity. This is not because the steel which is used is so very expensive but because the labor involved in attaching the hard-metal composition to the steel shank and in grinding and otherwise shaping the completed tool is of such consequence that the value of this labor often exceeds the value of the tungsten carbide contained in the tool. For example, a typical tool having a 5 gram blank on a steel shank three-quarters inch square would cost $8.40 as a finished tool while the 5 grams of tungsten carbide incorporated in that tool was priced at only $2.25. This is an average comparison of relative values. The proportions could be made much more one-sided. For example, a standard Carboloy tungsten carbide blank might be used weighing 4.98 grams which, under the price schedules in effect prior to the indictment of August 30, 1940, was priced at $1.80. In addition, there are certain categories of tools which involve extra fabricating work. If the tool above mentioned were given such extra finishing, the value attributed to the unpatented part would be $9.32 as compared with the $2.25 or $1.80 for the value of the tungsten carbide contained therein. Nevertheless, Carboloy has required its so-called agents, and its licensees and their so-called agents to sell at fixed prices not only the hard metal composition claimed to be covered by the pooled patents, but has also set the price to be charged by them for the entire completed tool.

Carboloy has attempted to monopolize the tungsten-carbide industry by certain selling methods and by attempting to induce certain of its licensees to go out of business

In 1934 the Ludlum Steel Co., one of Carboloy's first licensees, surrendered its tungsten-carbide license and took a license under a new and different set of patents controlled by Carboloy. There is evidence to show that the grant of one license was the consideration for the surrender of the tungsten-carbide license. I quote from the letter of Jeffries, of Carboloy, to Morrison, of General Electric, dated October 4, 1933, which letter I introduce as exhibit No. 109:

"I had an opportunity to see Mr. Batchelor, Pres. of Ludlum Steel, Tuesday evening at his home in Albany. I stopped four hours between trains. My own mind was pretty well oriented at the outset and we had little difficulty in

Digitized by Google

agreeing in principle to the plan which I had formulated. I am determined that no set-up like the Carbide one will be made in this case. We do not want a free-for-all in the selling field nor do we want so many people in it.

"The general plan is as follows:

"1. Ludlum will cancel their carbide license and we will, insofar as possible 'take over' their agents and accounts. This bids fair to give us an added $75,000 business per year which should yield some $35,000 profit. There will be no written agreement on this point, however, but it is definitely understood that the cancellation of this carbide license is a prerequisite. This will help the carbide picture in addition to throwing carbide business our way.

"2. Ludlum will be given a nonexclusive license to manufacture and sell under Miller, Koster, Dean and Sykes to the extent of ⅓ the Carboloy-Ludlum combined total in dollars at a royalty of 7½% of net sales billed."

That a similar offer under the same conditions was made to the Firth-Sterling Steel Co., Carboloy principal licensee, is shown by the letter from Jeffries, of Carboloy, to Robbins, of Carboloy, dated March 8, 1934, which I introduce as exhibit No. 110.

"When I was in Pittsburgh on Monday it occurred to me that I could give Mr. Firth a brief résumé of the Alloy #548 situation so that he would have time for considerable consideration by his company prior to the time of our more general meeting. I therefore got in touch with him and spent an hour or more with him on Monday evening. I told him confidentially what we had arranged with Ludlum and gave him in general the whole #548 world picture. Very early in our discussion I indicated that the least we could do was to offer Firth the same arrangement that we offered Ludlum."

Carboloy has in truth been the dictator of the tungsten-carbide industry. Because it was such a dictator and because its regulations of "prices and terms and conditions of sale" were extended to the smallest details of the selling policies of the licensees, it was inevitable that the licensees should become of the opinion that Carboloy was promulgating its prices and terms and conditions of sale in such a way as to further its own business at the expense of its licensees. Whatever Carboloy's purpose has been, it is apparent that in many instances it has trampled upon the feet of its associated companies. For example, Carboloy has interpreted its discount schedule to mean that a quantity of "identical" pieces of tungsten carbide, while they must be of the same size, may be composed of various grades of hard-metal composition. Because certain of its licensees, to wit: The Vascoloy-Ramet Corporation and the American Cutting Alloys Co., have been restricted in the types of hard-metal composition which they could manufacture, it is obvious that a purchaser desiring to buy a number of grades of metal and naturally wishing to obtain the lowest price would purchase from a manufacturer making and selling a complete line of products.

A particular example of the manner in which Carboloy has used its power to fix prices is shown by the following incident. Prior to October 1, 1936, as you have seen, tungsten carbide was sold at a lower price per gram in the form of large pieces than it was in the form of smaller ones. When certain customers began to buy large pieces of tungsten carbide from the Firth-Sterling Steel Co. for the purpose of cutting them into smaller pieces, Carboloy changed the system of pricing to give the same price per gram for all pieces regardless of size. This was done in spite of the fact that it is often easier to make a large piece than a small one because of handling difficulties. I introduce as exhibit No. 111 a letter from Robbins, of Carboloy, to Merry, of Carboloy, dated February 11, 1935, and I quote from that letter as follows:

"I am quite sure that I can prohibit Firth-Sterling from propaganding large pieces of tungsten carbide to be subsequently cut up by the customer. There is nothing in the manual to prohibit this practice but we will not foster such a scheme. So far we have been able to keep all licensees in line on that matter."

I next introduce the letter from Robbins of Carboloy to Fullagar of Carboloy, dated June 2, 1936, as exhibit No. 112 and I read this letter in full:

"I have your letter of May 26th with reference to the question of large tips. It is true that this procedure has become permanent here with the Ford Motor Company. It was started by some of our competition and it is one of the means that is being used by Ford to break down our price structure.

"There is no question but what it will spread but at the same time we are not accepting orders from anyone else for such materials.

"It is our intention in the near future to so arrange the price manual that this will be out of order."

Digitized by Google

There is also considerable evidence that Carboloy has used its power to fix prices by informing principal customers far in advance of pending price changes. Every businessman will quickly understand the effect of this practice. I now introduce as exhibit No. 113, a letter from Jeffries of Carboloy to Jackson of General Motors, dated July 5, 1932, which clearly shows that Jeffries had informed the General Motors Corporation of a price change which took place 3 months later. I read from this letter:

"On my second visit on March 28, 1932, I explained to you that our attorneys would not allow us to offer the new material to General Motors Corporation at prices lower than those extended to other customers in like quantities. I then explained to you that we had worked out a plan to take care of the General Motors Firth-Sterling agreement, which was independent of the new material and which appeared, at least to me, to be very favorable to General Motors Corporation.

"We refrained from asking the Firth-Sterling Steel Company to cancel this agreement forthwith, but decided to allow the agreement to stand until such time as a price reduction on cemented tungsten carbide and on tools made therefrom became effective. I gave you an idea of the magnitude of these price changes and, in fact, the schedule on raw cemented tungsten carbide which I gave to you in confidence is exactly the schedule which became effective on June 30, 1932."

At a meeting in 1938 of the Carboloy executives, Robbins is reported to have said, and I quote as follows from a document previously identified as exhibit 58:

"We are committed to a 10¢ per gram minimum price in quantities on January 1, 1939. This commitment was forced by the threats of large customers to do their own manufacturing. One had already started and another was practically ready."

In its desire to retain for itself the lion's share of the General Motors business, Carboloy has expressly gone so far as to grant a secret rebate to the prices established by itself for itself and its licensees. In 1939 Carboloy set up a procedure which would enable General Motors to purchase at the maximum quantity discount regardless of whether or not it purchased the necessary quantity of each size and type of piece bought. I quote from the letter of Campau of General Motors to Carboloy, dated June 14, 1939, which I introduce as exhibit No. 114:

"Attached you will find our Purchase Order No. 12803 covering three thousand (3,000) each of the tip sizes selected by our Tool Standards Committee, with your approval.

"You will note we have not mentioned in this order anything relative to the invoicing to the Corporation of any unshipped balances of these tips after sixty days has elapsed from date of order. It is our understanding you propose to bill such unshipped balances to us, but it is understood between us these invoices will never be paid. You have expressed willingness to send us credit offsetting such invoices thirty (30) days after receipt of same, if we so desire."

Subsequent information in possession of the Department of Justice indicates that in many instances General Motors did not purchase in large quantities required to qualify it for the minimum price.

Carboloy has also used its position as a General Electric subsidiary in order to induce prospective buyers to purchase its product by calling to the attention of such prospective purchasers the fact that the reciprocal business done by General Electric had been substantial. In Jeffries' memorandum of October 29, 1931, which has previously been identified as exhibit No. 11, the following appears:

"The reciprocity feature should be an important one in the future activities of Carboloy Company, Inc."

The Carboloy discount schedule prevented potential competition, and the effect thereof has been unnecessarily to discriminate between purchasers

Immediately prior to the indictment, the Carboloy price schedule was established at about $205 per pound, but certain large consumers, such as Ford and General Electric, were granted discounts from this figure of 75 percent and 10 percent, which made the price as to them approximately $45 per pound. This schedule of discriminatory discounts was first inaugurated and has subsequently been employed due to the threats of certain large consumers to avoid the necessity of paying high prices for tungsten carbide for manufacturing for their own use. I introduce as exhibit No. 116 a letter from Anderson of General

Digitized by Google

Electric to Boynton of General Electric, dated March 26, 1937, and I read as follows from that letter:

"While I do not know of anything for you to do on the matter, I thought you should know that Carboloy is in a very serious jam with Mr. Weibel, Director of Purchases, and Mr. Sorenson at the Ford Motor Company.

"As we understand it, Ford's have gone ahead to manufacture tungsten carbide and tools for their own use, entirely disregarding the Carboloy patents. When Mr. Robbins called this to their attention and pointed out their patent infringement, they indicated to him that they were doing a going rate of ten or twelve million dollars a year with General Electric and so should not have any trouble about patents on Carboloy."

I quote also from a letter from Robbins of Carboloy to St. Clair of Carboloy, dated April 28, 1937, which I introduce as exhibit No. 117:

"* * * the scheme of reducing the prices as the quantity of tips per order goes up will at the present time solve the major difficulties we have in the field, particularly with large users. We are primarily concerned in this change with quickly stopping the manufacture of carbide on the part of two or three very large users to infringing competition which at the moment is flaring up very formidably * * *. I agree with you that the lower price per gram in large pieces is coming and will be in effect eventually. The present scheme is in that direction and will solve our problems now."

I now quote from a letter from Robbins of Carboloy to McKenna of Vanadium Alloys Steel Co., a Carboloy licensee, dated June 17, 1937, which I introduce as exhibit No. 118.

"I was able yesterday, in view of the new Price Manual, to get the Ford Motor Co. to give up their further plans in connection with the manufacture of tungsten carbide and to get them to offer for sale the equipment which they have on hand to you and to us if we want it."

On December 10, 1938, Robbins of Carboloy wrote to Weibel of Ford, informing him of the new Carboloy price schedule and inclosing a tabulation comparing present prices with those calculated under the proposed manual. The tabulation shows that under the new price list Ford would be able to purchase tungsten carbide for as low as 11.3 cents per gram, less 10 percent quantity discount and one-half of 1 percent cash discount. The tabulation shows that purchasers in quantities of from 1 to 49 identical pieces would have to pay at the rate of 45 cents per gram. I introduce this letter as exhibit No. 119.

An illustration of an apparent suppression of one use of tungsten carbide

One of the first successful applications of cemented tungsten carbide was in the making of phonograph needles. A memorandum from Morrison of General Electric to Davis, a General Electric vice president, dated March 29, 1928, which I introduce as exhibit No. 120, contains the following paragraph:

"On February 17, 1928, I filed an application for George F. Taylor, Serial No, 255,145. This application covers a phonograph needle made of carboloy. The needle may be squirted or pressed according to the Gilson or Hoyt processes. One of these needles played 500 phonograph records and when examined under the microscope did not show the slightest sign of wear. After playing these records the needle was accidentally broken so that we do not know just how good the needle is. It appears to me, however, to be a remarkable product and far superior to the ordinary tungsten needle."

The patent pooling agreement between General Electric and Krupp, dated November 5, 1928, contains several specific reservations in favor of prior agreements entered into by the contracting parties. In the second paragraph of article II it is stated that General Electric by a prior agreement with the Radio Corporation of America and others "has granted and agreed to grant certain exclusive and nonexclusive licenses under its United States patents and patent rights in the fields of telephone, telegraphy, and radio, and is obligated to treat all devices for and in connection with the production of sound and/or pictures for entertainment, educational, and similar purposes, as radio devices."

I introduce a memorandum of Buck of International General Electric, dated April 29, 1930, as exhibit No. 121. It is written with reference to a proposed agreement between International General Electric and Krupp, further clarifying the rights of General Electric and Krupp as to various territories. It contains the following:

Digitized by Google

"Krupp ought not to be permitted to import phonograph needles or material for making phonograph needles into the United States."

On September 25, 1931, Goldsborough, a patent attorney for the RCA Victor Co., wrote to Dunham of the patent department of General Electric, as follows:

"There is a possibility that this company will desire to manufacture carboloy needles, particularly for use in connection with long playing phonograph records and automatic phonographs.

"It is my personal understanding (I have no written data) that General Electric has rights in this country relative to carboloy or Widia which they acquired from abroad and that these rights are extended to us for phonograph purposes by virtue of the inter-company agreements. Please advise me as soon as convenient whether or not my understanding is correct. In the event that we have the right to use carboloy for phonograph needles, must we obtain the material from your company or may we manufacture it ourselves?"

I introduce this letter as exhibit No. 122.

General Electric's reply, written by Morrison, which I introduce as exhibit No. 123, was as follows:

"The General Electric Company has rights in this country in connection with the manufacture and use of cemented carbides and certain of these rights extend to the R. C. A. Victor Company. You have the right to use this material for phonograph needles. However, you will have to obtain the material from the General Electric Company since the Carboloy Company has no rights under G. E. patents in connection with sound reproducing devices.

"I believe that if it is necessary to do so it might be possible for the General Electric Company to sell the powdered raw materials to the R. C. A. Victor Company and for that company to fabricate the needles."

All this was in 1928–31. But the department knows of no attempt to commercialize phonograph needles made from tungsten carbide until very recently. In the March 28, 1942, issue of the New Yorker Magazine appears an advertisement of a long-lived needle which appears to be made from tungsten carbide. The advertisement states that this product is being manufactured by the Pfanstiehl Chemical Co., of Waukegan, Ill., which is probably very closely related to the Fansteel Metallurgical Corporation of North Chicago. The latter company was a Carboloy licensee from 1933 until 1940. I introduce the advertisement as exhibit No. 124.

PROFITS OF CARBOLOY CO., INC.

Carboloy's profits have not been large, relatively speaking. The department believes this is accounted for by the patent pool's drastic limitations upon production. But it has been represented that Carboloy's early losses incurred in exploiting tungsten carbide amounted to about $1,500,000 by 1931 and that these early losses were not recouped until 1940. It has also been stated by Carboloy officials that the company first got out of the red in 1932 and first began paying dividends in 1935. See memorandum dated July 5, 1935, of Jeffries which I now introduce as exhibit No. 125. Such representations require some explanation. In the first place, it appears that once dividends began to be declared they were substantial. For example, net profits available for dividends in the year 1935, after deductions of interest, taxes, and other charges, amounted to $375,000, according to Jeffries' letter to Swope, December 15, 1935, which I introduce as exhibit No. 126. The dividend declared in the year 1936 was in the amount of $322,000, according to the letter from Oberle of Carboloy to General Electric, dated December 10, 1936, which I introduce as exhibit No. 127. Furthermore, a study of the accounting procedures and financial practices which have been followed by Carboloy show that the company not only had recouped its early losses by 1940 but had practically accumulated out of profits its entire capital expenditures prior to that time. The following are some of the profit items which are not shown on Carboloy's balance sheets:

1. *Interest charges.*—Carboloy Co. was capitalized by only about $200,000 in cash and by about $1,400,000 in loans made to it by General Electric up until 1933. These loans carried interest in the amount of 5½ percent which was charged to expense. See the letter from Van Dyck of General Electric to Whitestone of General Electric, October 24, 1933, which I introduce as exhibit No. 128. The effect of this type of financing upon Carboloy's affairs is shown by the fact that of the $142,858.88 shown as losses during the first 9 months of 1931, $70,534.38 was accounted for by interest paid General Electric and by

Digitized by Google

manufacturing profits paid to other divisions and associates of General Electric. See exhibit No. 11. The loans were largely repaid out of profits by October, 1936, after Carboloy had also paid to General Electric over $300,000 in the form of interest.

2. *Cost-plus manufacturing contracts.*—Until it acquired a factory of its own about the first of 1938, Carboloy always paid 15 percent in addition to the cost of the manufacture of tungsten carbide and the tools and dies embodying tungsten carbide which were sold by it. It is estimated that on account of these arrangements the Cleveland Wire Works of General Electric received about $450,000 in manufacturing profits. This estimate is based upon data such as the following: In a letter from Jeffries, president of Carboloy, to Swope, president of General Electric, dated June 25, 1934, which I have introduced as exhibit No. 129, Jeffries reported that Cleveland Wire Works of General Electric "shows a profit of over $10,000, after allowing for $15,000 home office loading and $7,000 other loading items" for the first 5 months of 1934. In addition, a letter dated December 15, 1935, from Jeffries to Swop, which I have just introduced as exhibit No. 126, states as follows regarding Carboloy's operations for 1935: "The net profit after tax, interest, and other charges should be around three hundred twenty-five thousand. The incandescent lamp department should be at least sixty thousand better off for the year because of their billings to the Carboloy Co."

3. *Charges by General Electric Research Laboratory.*—The development costs do not form part of the capital expenditure shown on the Carboloy Co.'s statement because of the practice by which the General Electric Research Laboratory submits bills periodically to the various General Electric divisions on account of research work done.

4. *Royalties.*—By virtue of the various license and pooling agreements, General Electric received one-third of the royalty payments which have been made by Krupp and the various Carboloy licensees until the patents were declared invalid in 1940. This payment was at the rate of $1.66 per pound and amounted to a total of at least $60,000 by 1939. In addtiion, General Electric has received royalty payments from Carboloy in the amount of $1.66 per pound until June 1936.

EXHIBIT No. 129

TETRACENE

Statement by Allen Dobey

My name is Allen Dobey, and I am and have been since August 1938 a special assistant to the Attorney General, attached to the Antitrust Division of the Department of Justice, and engaged in the prosecution of violations of the Sherman Act. I appear here in obedience to subpenas duces tecum served upon me and upon my superior, Mr. Thurman Arnold, Assistant Attorney General. Pursuant to these subpenas, I am producing 29 exhibits, which are for the most part copies of original communications and other documents from the files of the Remington Arms Co. The Remington Arms Co. is a corporation controlled since 1933 by E. I. du Pont de Nemours & Co., and is engaged in the manufacture and sale of guns, rifles, and ammunition. Its principal executive offices and its principal plants are located at Bridgeport, Conn.

The documents I am producing (and the facts they disclose) were first revealed to the Government when they were submitted in obedience to a subpena duces tecum served in aid of a routine grand jury investigation of possible violations of the Sherman Act. The subpena was issued June 19, 1941, and the documents which I am producing have been in the possession of the Department of Justice since sometime last fall.

Except to answer such questions of the committee as I may be qualified to answer, I shall confine my testimony to a recital of the facts which are set forth in the documents—in the main quoting directly from the documents themselves—and to comments which may be necessary for purposes of explanation. I understand that the purpose of these hearings is not to punish for any violations of law or questionable practices, or to impugn the motives or question the patriotism of any person, but rather to discover what, if anything, is wrong with the present patent system in the light of the existing emergency. I shall endeavor to point out from the evidence in my possession practices which may be encountered under our present patent system—which practices may need correction.

Digitized by Google

Before taking up the evidence in detail, I may say briefly that the documents at hand will disclose the following story of the use or abuse of the patent rights and of the business opportunities which the possession of a patent affords.

Since 1929 Remington has owned United States patents covering priming compositions containing tetracene. Tetracene is a chemical compound used with great success as a sensitizer or combustion initiator in a priming composition. A priming composition is a sensitive composition of matter which operates upon receiving a blow and serves to cause the combustion of the propellant powder which discharges the projectile. As owner of these patents, Remington has acquired the exclusive right to make, use, and vend this product. As far as these patents are concerned, Remington may make and sell the product in foreign commerce in any part of the world, and may license others to do so likewise. But, by the force of an international cartel agreement founded upon patent controls, entered into in 1929 for the life of the patents and still in force and effect (an international agreement entered into with German corporations, Rheinisch-Westfaelische Sprengstoff, A. G., and Dynamit, A. G., subsidiary companies of I. G. Farbenindustrie), Remington has been prohibited from selling any military ammunition whatever containing any of this priming composition to any of the countries of the British Empire. For example, Remington may not sell such military ammunition to Great Britain, or to Canada, or to the Irish Free State. This is not because British, Canadian, or Irish Free State patents would be infringed. Remington is licensed to sell in Great Britain by the British owner of the British patent covering this product. The Canadian patent covering the product held by Canadian interests is considered invalid. In the Irish Free State there is no patent at all. No; such sales are prevented solely by reason of this cartel agreement with these German companies.

As late as January 1941 the terms of this agreement with the German companies were actually invoked to bring a halt to sales by Remington of such military ammunition to the British Purchasing Commission and to the Union of South Africa.

The documents at hand and the facts they present will point up the following features which may be of interest to the Committee on Patents:

1. A German corporation which has sold a United States patent to an American corporation may still by agreement effectually prohibit that American corporation from selling the product covered by the patent even in countries where there are no patents owned by anyone which would be infringed by such sales.

2. By such agreements this American corporation, although it owns the patent, may still be prohibited by the German corporation from permitting any American licensee to sell the product outside the limits of the United States.

3. By such agreements these restrictions may be imposed not only on the patented product, such as the priming composition here, but upon any unpatented military ammunition which happens to contain a small quantity of this primer, although the military ammunition so restricted may be in volume and in value many times greater than the patented primer.

4. Thus, by such agreements, our American exports, our American productive capacities and our aid to our British Allies may be and are restricted by German interests which have no patent rights whatever to protect by such restrictions.

5. By such agreements, such German interests have been in a position to obtain, through reports required of the American concern, by the right to inspect its books, and by a computation of percentage royalties, exact information as to the amount of such military ammunition sold to the United States Government or to its allies or to anyone else.

6. By such agreements the German interests are permitted to exact royalties on tetracene primed ammunition sold by Remington, even upon that sold to the United States Government for its prosecution of the present war. But, nevertheless, the title to the patent, which patent alone gives rise to the right to such royalties, having been assigned to Remington instead of being retained by the German interests, may not be taken over in time of war with Germany by our Alien Property Custodian. This is true even though the German company may exact a reassignment of the patent in the event that royalties in sufficient amount are not paid by Remington.

It is my opinion that this cartel agreement could be voided under the antitrust laws as an unreasonable restraint of our foreign commerce, particularly in view of the fact that full title to and ownership of the United States patents is vested in the Remington Arms Co., and Rheinisch-Westfaelische Sprengstoff, A. G., no longer owns the patents in Great Britain and Canada. However, it

Digitized by Google

may be that the law relating to this restraint and similar restraints should be clarified by an amendment to the patent law. Consideration might be given to amendments outlawing agreements contained in patent assignments or patent licenses which prohibit or restrict the production, distribution, or exportation of patented articles.

PATENT HISTORY

In about the year 1922 a German inventor, Hans Rathburg, discovered that tetracene could be used in lieu of mercury fulminate as the sensitizer in a priming composition.

The use of mercury fulminate in a priming composition had a number of disadvantages. As set forth in a memorandum from the files of the Remington Arms Co., dated September 27, 1928, apparently written by L. J. Herrmann, works manager of the Remington Arms Co., these disadvantages were as follows—I quote (exhibit No. 1):

"1. The price of mercury is inclined to increase rather steadily, and with it the price of all mercury compounds must increase.

"2. All of the important deposits of mercury are in foreign countries, and this might result in curtailing of the supply in time of war.

"3. Mercury fulminate, in common with other mercury compounds, is more or less poisonous to the workers handling it, or priming mixtures containing it. This poisoning varies from an itchy skin rash to occasional cases of chronic mercury poisoning with more serious symptoms. This is sometimes a source of trouble in production, causing a large labor turn-over in certain departments. Thus, when we began to use our present noncorrosive rim-fire priming mixture, several hundred people were tried in the rim-fire priming room before a gang which was sufficiently resistant to the poisoning could be collected. Even now there is considerable turn-over of labor on this job.

"4. Mercury fulminate, or the free mercury in it, also attacks brass, and, since ammunition is largely made of brass, this frequently leads to difficulties. The brass primer cups in which a fulminate priming mixture is loaded must be made softer than otherwise desirable in order that the mercury may not make them split; and they are also nickel-plated to assist in preventing this. Whenever a primer explodes while inserting it in a brass cartridge case, mercury is sprayed all over the interior of the case and will so weaken it that it will burst when fired. Consequently, all such shells must be scrapped, and constitute a loss which would not have occurred had not a mercury compound been used in the priming mixture. Whenever primers are tested for sensitiveness when seated in shells these must also be scrapped because of the poisoning of the brass by the mercury. This same poisoning also prevents reloading of fired cartridge cases which would otherwise be possible.

"5. Mercury fulminate gradually decomposes into nonexplosive substances under the action of heat and moisture, and is, therefore, a source of weakness in a primer. Many complaints of misfires in ammunition can be traced to decomposition of the fulminate in the priming mixture. This action of fulminate was well illustrated in the exhibits that Mr. Von Herz brought with him last May.

"6. Mercury fulminate is very violent in its action. This results in such ammunition defects as punctured primers, blown primers, gas escapes around primer pocket, etc.

"7. Mercury fulminate gives off very little heat when it explodes, and adds but little to the heat of a priming mixture."

This memorandum proceeds to point out the advantages of tetracene over mercury fulminate. Parenthetically it should be noted here that the Germans and occasionally Remington use the word "sensol" interchangeably with the word "tetracene." I quote:

"* * * The advantages which sensol would have over mercury fulminate would be:

"1. It can be made from materials which could be available in this country even in wartimes.

"2. It is not believed to attack brass as fulminate does.

"3. German experiments have indicated that sensol-polnol mixtures are extremely stable, while fulminate mixtures are not.

"4. It gives off considerable heat when it burns, and would be a source of heat in a priming mixture."

Not long after this memorandum was written, Remington appears to have definitely concluded that tetracene or sensol was effective as a sensitizer in a priming composition and that its use had none of the disadvantages attendant

Digitized by Google

upon the use of mercury fulminate. Thus United States Patent No. 1,889,116 (exhibit No. 2), issued November 29, 1932, to the Remington Arms Co. reads in part as follows—I quote:

"The present invention comprises the discovery of a highly successful combination of ingredients by the use of which both mercury fulminate and corrosive oxidizers are rendered unnecessary, and the further discovery that the sensitizing function of mercury fulminate is effectively performed by an extremely small quantity of another sensitizer which does not have the disadvantages of mercury fulminate.

"The sensitizing agent utilized in the present invention is selected from the class of compounds known as tetracenes * * *.

On December 20, 1923, the German inventor, Hans Rathburg, filed an application in the United States Patent Office for a patent on priming compositions containing tetracene. The application was granted and United States Patent No. 1,586,380 (exhibit No. 3) issued to Rathburg on May 25, 1926. Rathburg assigned the patent to Rheinisch-Westfaelische Sprengstoff, A. G., a corporation organized under the laws of Germany with its executive offices at Cologne, Germany.

Rheinisch-Westfaelische Sprengstoff, A. G., is a 100-percent-owned subsidiary of Dynamit, A. G., a corporation organized under the laws of Germany with executive offices at Troisdorf, Germany. Dynamit, A. G., in turn is affiliated with the I. G. Farbenindustrie of Germany—under an arrangement whereby the profits of Dynamit, A. G., are turned over to the I. G. Farbenindustrie and the I. G. Farbenindustrie pays an amount to Dynamit, A. G., which permits Dynamit, A. G., to pay a dividend comparable to the dividend paid by the I. G. Farbenindustrie. The I. G. Farbenindustrie has the right at any time to exchange shares of I. G. Farbenindustrie for the shares of Dynamit, A. G. Until shortly after November 26, 1940, a substantial portion of the stock of Dynamit, A. G., was owned by the E. I. du Pont de Nemours & Co. E. I. du Pont de Nemours & Co. also held a stock interest in the I. G. Farbenindustrie.[1]

Pursuant to an application for reissue filed October 18, 1929, United States Patent No. 1,586,380 was reissued by the United States Patent Office in the name of Rheinisch-Westfaelische Sprengstoff, A. G., on December 31, 1929, as Reissue No. 17,540 (exhibit No. 4).

On February 20, 1930, Hans Rathburg and Edmund von Herz, as joint inventors, in collaboration with Remington, filed an application in the United States Patent Office for a patent on priming compositions containing tetracene in extremely low quantities, to wit, in an amount not greater than 4 percent of the priming composition. This application (No. 430,138) was a continuation in part of an earlier application (No. 352,893) filed April 5, 1929. The new application, it was claimed, disclosed the proper and most desirable quantities of tetracene to be used in priming compositions to secure the proper ignition of the powder.

Rathburg and von Herz assigned the application to Rheinisch-Westfaelische Sprengstoff, A. G. The application was granted and United States Patent No. 1,889,116 (exhibit No. 2) was issued on November 29, 1932, to the Remington Arms Co. as assignee of the application from Rheinisch-Westfaelische Sprengstoff, A. G.

RESTRICTIVE PATENT ASSIGNMENTS

By an agreement dated November 14, 1929 (exhibit No. 5), Rheinisch-Westfaelische Sprengstoff, A. G., assigned all the United States patent rights relating to tetracene to the Remington Arms Co. (The patent rights assigned included U. S. Patent No. 1,586,380 issued May 25, 1926, and later reissued as Reissue No. 17,540 on December 31, 1929, and U. S. Application No. 352,893 which later issued on November 29, 1932, after having been continued in part by a new application (No. 340,138), as U. S. Patent No. 1,889,116.) As consideration for the assignment the Remington Arms Co. agreed to pay Rheinisch-Westfaelische Sprengstoff, A. G., $25,000 and agreed to make stipulated additional "royalty" payments to Rheinisch-Westfaelische Sprengstoff, A. G., during the life of the United States patents (these additional payments were designated as "royalty" payments although the patents were assigned to the Remington Arms Co., with full title to, and ownership of, the patents vested in the Remington Arms Co.).

[1] On November 26, 1940, du Pont's executive committee authorized the sale of du Pont's stock interests in Dynamit, A. G., and I. G. Farbenindustrie.

Digitized by Google

At the time of the agreement of November 14, 1929, between Rheinisch-Westfaelische Sprengstoff, A. G., and the Remington Arms Co., Rheinisch-Westfaelische Sprengstoff, A. G., also held the British and Canadian patent rights to tetracene, but Rheinisch-Westfaelische Sprengstoff, A. G., had already agreed to transfer the Canadian patent rights to Canadian Industries, Ltd., a Canadian corporation, and negotiations for the sale of the British patent rights to Imperial Chemical Industries, Ltd., a British corporation, were under way. The agreement of November 14, 1929, between Rheinisch-Westfaelische Sprengstoff, A. G., and Remington provided that the license rights which Remington was to enjoy in Great Britain were to be determined by negotiations between Remington and Imperial Chemical Industries, Ltd., and the license rights which Remington was to enjoy in Canada were to be determined by negotiations between Remington and Canadian Industries, Ltd. Nevertheless, as will be noted shortly, the agreement of November 14, 1929, imposed certain absolute restrictions upon Remington's sales of ammunition in Great Britain and Canada irrespective of the extent of the license rights which Remington might secure from Imperial Chemical Industries, Ltd., and Canadian Industries, Ltd.

The agreement of November 14, 1929, provides for a world-wide division of tetracene primed ammunition markets between Rheinisch-Westfaelische Sprengstoff, A. G., the Remington Arms Co., Imperial Chemical Industries, Ltd., and Canadian Industries, Ltd. For the purposes of the division of markets established by the agreement, the agreement drew a distinction between military and nonmilitary ammunition. Military ammunition was defined as follows (exhibit No. 5, page 6):

"The term 'military ammunition' as used herein is defined as ammunition adapted and intended for use in warfare and shall not include ammunition adapted and intended solely for sporting purposes or target practice which is herein referred to as 'nonmilitary ammunition.'"

As part of the division of territory effected by the agreement, subdivision (d) of the agreement provides as follows:

"(d) REMINGTON shall not sell military ammunition containing any tetracene in Germany and in any or all of the countries comprising the British Empire."

Other cartel provisions are found in section III (a) and section VIII of the agreement. Section III (a) provides as follows:

"(a) REMINGTON shall not sell nonmilitary ammunition containing any tetracene in Germany in excess of a value of $2,000 in any one year, all sales through Gustav Genschow & Co. not being taken into consideration in computing this $2,000 maximum."

Section VIII provides as follows:

"VIII. REMINGTON, as the owner of the United States patents, has the exclusive rights for the United States of America, but it hereby agrees that R. W. S. may import into the United States of America during any calendar year tetracene ammunition having a value not in excess of 30% of the value of the total imports of ammunition into the United States from all sources during the preceding calendar year and that the Imperial Chemical Industries, Ltd., or its subsidiary companies may import annually into the United States of America not more than 500,000 shotgun cartridges and 10,000 metallic cartridges containing priming material covered by any of the United States patents herein involved."

Notwithstanding the fact that the United States tetracene patents were assigned outright to the Remington Arms Co., Rheinisch-Westfaelische Sprengstoff, A. G., retained certain controls over Remington's use of these patents. Thus section IX of the agreement with Rheinisch-Westfaelische Sprengstoff, A. G., restricts Remington's right to grant licenses under these patents as follows:

"IX. Remington shall have the right to license other American manufacturers to manufacture, use and sell nonmilitary ammunition under any of the United States patents or applications involved in this agreement, but only within the United States of America, its territories and possessions."

Section X of the agreement appears to impose the same restriction upon Remington's right to grant licenses with respect to military ammunition, as follows:

"X. Remington shall have the right to license other American manufacturers or the Government of the United States under any of the United States patents or applications involved in this agreement to manufacture, use and sell military ammunition containing tetracene *within the United States, its territories and possessions.* * * *" [Italics supplied.]

Digitized by Google

On January 1, 1934, an agreement (exhibit No. 6) was entered into between Dynamit, A. G., parent corporation of Rheinisch-Westfaelische Sprengstoff, A. G., and the Remington Arms Co. which left the cartel provisions of the November 14, 1929, agreement with Rheinisch-Westfaelische Sprengstoff, A. G., unchanged. Dynamit, A. G., succeeded to the rights of Rheinisch-Westfaelische Sprengstoff, A. G., under the November 14, 1929, agreement. The new agreement of January 1, 1934, amended the definition of military ammunition contained in the 1929 agreement to read as follows:

"'Military ammunition' is defined as ammunition of sizes and types ordinarily used in war and sold directly to or made under a license from Remington by a government actually engaged in war, or storing the ammunition thus made or purchased for the purpose of war. All loose primers sold to the United States Government shall be considered as military ammunition. 'Commercial ammunition' (nonmilitary ammunition) includes all ammunition not coming within the above definition of military ammunition."

There were also modifications of the "royalty" provisions of the 1929 agreement with respect to both nonmilitary and military ammunition.

The new agreement of January 1, 1934, between Remington and Dynamit, A. G., was expressly approved by E. I. du Pont de Nemours & Co., as appears from documents and correspondence from the files of the Remington Arms Co. attached hereto as exhibit No. 7. It will be recalled that du Pont had acquired control of Remington in 1933 and also held a large block of the stock of Dynamit, A. G., and that in addition du Pont had a stock interest in the I. G. Farbenindustrie, A. G., which company controlled Dynamit, A. G.

The British tetracene patents appear to have been assigned by Rheinisch-Westfaelische Sprengstoff, A. G., to Imperial Chemical Industries, Ltd., in the latter part of 1930. In 1931 Imperial Chemical Industries, Ltd., licensed Remington under the British tetracene patents, authorizing Remington to ship ammunition to Great Britain for sale in Great Britain, Northern Ireland, and the Isle of Man (see exhibit No. 8). As consideration for the license Remington agreed to make stipulated royalty payments to Imperial Chemical Industries, Ltd., and in addition Remington agreed not to materially increase its sales force or advertising in Great Britain and "to adhere to existing prices and trading arrangements."

The license from Imperial Chemical Industries, Ltd., did not distinguish between military ammunition and commercial ammunition; hence, insofar as the license from Imperial Chemical Industries, Ltd., is commercial, Remington has authority to sell military ammunition containing tetracene in Great Britain, and the license has been so construed by Remington. Thus an inter-office memorandum prepared by A. J. Greene, head of the Patent Department of the Remington Arms Co., and dated September 27, 1940, reads in part as follows—I quote (exhibit No. 9, page 2):

"Our agreement with I. C. I., which is in the form of several letters summarized in a Memorandum attached to Mr. Norvell's letter of June 24, 1931, permits us to sell 'centerfire ammunition in Great Britain upon the payment to I. C. I. of a royalty of one per cent (1%) of our sales price. The Memorandum does not distinguish between 'military' ammunition and 'commercial' ammunition; hence. we take it that both can be sold, and the royalty rate is the same for both. No royalty on this ammunition is payable to R. W. S. or D. A. G."

Rheinisch-Westfaelische Sprengstoff, A. G., assigned the Canadian tetracene patent rights to Canadian Industries, Ltd., on December 1, 1930. (See exhibit No. 10.) On April 24, 1931, Canadian Industries, Ltd., licensed Remington to sell "nonmilitary ammunition" containing tetracene in Canada. A photostatic copy of the license is attached hereto as exhibit 11. As consideration for the license Remington, in addition to making specified royalty payments, agreed that it would conduct its business in Canada in such a way as to avoid detriment to Canadian Industries, Itd., and would observe stated price and distribution policies (as set forth in a photostatic copy of a summary of the Remington agreement with Canadian Industries, Ltd., from the files of the Remington Arms Co., attached hereto as exhibit No. 12).

It will be noted that although Remington's license from Imperial Chemical Industries, Ltd., authorizes Remington to sell military ammunition containing tetracene in Great Britain, Remington's license from Canadian Industries, Ltd., does not authorize Remington to sell military ammunition containing tetracene in Canada. However, as appears from a letter dated October 29, 1938, written by

Digitized by Google

R. J. McDonald, head of the Patent Department of Canadian Industries, Ltd., to A. J. Greene, head of the Patent Department of the Remington Arms Co., Canadian Industries, Ltd., believes that the Canadian tetracene patent under which Remington is licensed is invalid. I quote (exhibit No. 13):

CANADIAN INDUSTRIES, LIMITED,
October 29th, 1938.

Re: Canadian Patent on Tetracene.

A. J. GREENE, Esq.,
Bridgeport, Connecticut, U. S. A.

DEAR MR. GREENE: Many thanks for your letter of October 24th.

Canadian Patent 297,882 was issued on March 4th, 1930, and will therefore expire on March 4th 1948. Confidentially we consider this patent of little value in Canada since the inventor failed to comply with the requirements of the Canadian Patent Act when he filed the Canadian Application.

Yours very truly,

[S] R. J. McDONALD.
Patent Department.

RJM/EB

As already noted, in 1931 when Canadian Industries, Ltd., licensed Remington under this patent to sell nonmilitary ammunition containing tetracene in Canada, Canadian Industries, Ltd., in addition to exacting royalty payments for the license, required Remington to agree to observe stated price and distribution policies. At this time, in 1931, Canadian Industries, Ltd., was jointly owned by du Pont and Imperial Chemical Industries, Ltd., but du Pont did not acquire control of Remington until 1933. Accordingly, since 1933 there has presumably been no possibility of a serious conflict of interests between Remington and Canadian Industries, Ltd. It is not surprising, therefore, that on October 29, 1938, Canadian Industries, Ltd., should advise Remington that the patent under which Remington had been licensed in 1931 was invalid.

EFFECT OF THE RESTRICTIVE ASSIGNMENTS

In 1940 Remington sold military ammunition containing tetracene to the Union of South Africa and also to the British Purchasing Commission for shipment and use in Great Britain. I quote from exhibit No. 9, a memorandum written on September 27, 1940, by A. J. Greene, head of the patent department of the Remington Arms Co., to R. Batten, of that company, with copies to D. F. Carpenter, vice president and director of manufacture of Remington, and R. D. Jack, assistant treasurer and assistant secretary of Remington:

BRIDGEPORT OFFICE,
September 27, 1940.

To: Mr. R. Batten.
From: Mr. A. J. Greene.
Re: Tetracene primed military ammunition.

In our discussion a few days ago you presented two (2) questions, as follows:

1. We are selling to the Government of the Union of South Africa two million (2,000,000) .38 S. & W. Special cartridges having lead bullets and tetracene priming.

QUESTION: Is this "military ammunition"?

Having given the point rather thorough consideration, I am satisfied that it should be so classified.

Our agreement with R. W. S. (D. A. G.) states:

"'Military ammunition' is defined as ammunition of sizes and types ordinarily used in war and sold directly to ———, a government actually engaged in war or storing the ammunition thus * * * purchased for the purpose of war."

The Union of South Africa is at war, its belligerence having been recognized in at least one proclamation by the President of the United States.

The only possible question could be whether the fact that lead bullets, instead of jacketed bullets, are used takes the cartridges out of the class of "military ammunition." While most modern military cartridges are provided with jacketed bullets, lead bullets still have a limited use, and their existence and arms adapted

Digitized by Google

for them only are discussed in such treatise on the subject as Colonel Hatcher's "Pistols and Revolvers," the British "Textbook of Small Arms, 1929," and the War Department Technical Regulations No. 1350–A, June 1, 1927. We are, moreover, supplying some lead bullet ammunition to the British Purchasing Commission for defense purposes, as more fully discussed below.

2. We are selling to the British Purchasing Commission, for shipment and use in Great Britain, certain revolver cartridges, some of which are provided with lead bullets, and all, as we understand it, containing tetracene priming.

QUESTION: Your question concerns the payment of royalty with respect to this priming.

Our agreement with I. C. I., which is in the form of several letters summarized in a Memorandum attached to Mr. Norvell's letter of June 24, 1931, permits us to sell "centerfire ammunition in Great Britain upon the payment to I. C. I. of a royalty of one percent (1%) of our sales price." The Memorandum does not distinguish between "military" ammunition and "commercial" ammunition; hence, we take it that both can be sold, and the royalty rate is the same for both. No royalty on this ammunition is payable to R. W. S. or D. A. G. (Mr. Dicke's letter of December 4, 1931, to Mr. von Herz.)

It is to be noted that royalties are payable to I. C. I. only on ammunition "for use in Great Britain or Northern Ireland." Should we sell tetracene primod ammunition to the British Purchasing Commission for use elsewhere it would seem the royalty thereon would be payable to the Gorman firm at the rate specified in the agreement (1% unless a lower rate is established by supplemental agreement).

Royalties are payable to I. C. I. until March 18, 1945, the expiration date of their British Patent No. 310,509.

A. J. GREENE, *Patent Attorney.*

AJG/m.

At this time, as this memorandum shows, Remington considered that the sale of military ammunition containing tetracene for shipment to Great Britain was permissible, by virtue of Remington's license from Imperial Chemical Industries, Ltd.

At the time of these sales in 1940 Remington inadvertently overlooked the November 14, 1929, agreement (as modified on January 1, 1934) between Remington and Rheinische-Westfaelische Sprengstoff, A. G., whereby Remington agreed with Rheinisch-Westfaelische Sprengstoff, A. G., that Remington would not sell any military ammunition containing tetracene to any of the countries of the British Empire. However, on January 23, 1941, Mr. A. J. Greene, head of the Remington Patent Department, wrote Mr. D. F. Carpenter, Vice President and Director of Manufacture of the Remington Arms Company, and Mr. W. U. Reisinger, Treasurer and Secretary of Remington, that no further sales of ammunition containing tetracene should be made to the British Purchasing Commission, the Government of the Union of South Africa, or the Government of Canada, because of Remington's agreement with Rheinisch-Westfaelische Sprengstoff, A. G. Mr. Greene's letter reads as follows:

cc. Mr. W. E. Witsil, Mr. R. Batten, Mr. T. F. Werme, Mr. W. U. Reisinger.

BRIDGEPORT OFFICE,
January 23, 1941.

To: Mr. D. F. Carpenter.
From: Mr. A. J. Greene.
Re: Sale of tetracene primed ammunition to the British Purchasing Commission.

The further sale of Tetracene Primed Ammunition to the British Purchasing Commission, or to the Government of The Union of South Africa, or to the Government of Canada, is most undesirable, by reason of our Tetracene Contract with R. W. S.

Article III, Paragraph (d) of the original contract of November 14, 1929, reads as follows:

"Remington shall not sell military ammunition containing any tetracene in Germany and in any or all of the countries in the British Empire."

This paragraph of the contract was affirmed in Article XII of the revision

Digitized by Google

of the original contract made on January 1, 1934. The revised definition of "military ammunition" is as follows:

"'Military ammunition' is defined as ammunition of sizes and types ordinarily used in war and sold directly to ——— a government actually engaged in war or storing the ammunition thus * * * purchased for the purpose of war."

There can be little if any question that pistol and revolver ammunition sold at this time to "His Majesty's Government in the United Kingdom" is "military ammunition" within the above definition; or that such a sale is a sale "in" a country of the British Empire within the intent of Article III (d) of the contract.

We understand that the Process Division have recommended the use of Tetracene priming in certain ammunition to be sold to the British Purchasing Commission. It appears obvious that this should not be done.

A. J. GREENE, *Patent Attorney.*

AJG/m

Mr. Batten:

Pending action on this letter, I suggest you continue the practice outlined in my letter of September 27, 1940.

A. J. G.

A photostatic copy of this letter is attached hereto as exhibit No. 14. That Remington promptly discontinued selling military ammunition containing any tetracene to the countries of the British Empire, in accordance with Mr. Greene's instructions, is evidenced by a memorandum written by T. F. Werme, Engineering Superintendent of the Remington Arms Company, on January 29, 1941, to Mr. D. F. Carpenter, Vice President and Director of Manufacture of Remington, as follows:

cc. W. T. Ashcroft, A. J. Greene, W. E. Witsil, W. U. Reisinger, R. Batten.

JANUARY 29, 1941.

To: D. F. Carpenter.
From: T. F. Werme.
Subject: Sale of tetracene primed ammunition to the British Purchasing Commission.

A few months ago we had an order for 2,500,000 .38 S. & W. 200 grs. Lead Bullet cartridges from South Africa. We were informed that it was to be a commercial cartridge the same as we made for Peters, but these were to be head stamped as for Remington, so it was natural for us to supply them as they were being made, which in this case was with #49–5021 mixture primers (this priming mixture contains Tetracene). We were not aware of the facts pointed out in A. J. Greene's letter to D. F. Carpenter, dated Jan. 23, 1941, that primers containing Tetracene should not be used in military cartridges sold to Germany or any of the British Empire countries.

Since copy of that letter was received, arrangements have been made to supply a non-tetracene mixture in the primers we are to use in a new order for the .38 S. & W. 200 Grs. Lead Bullet cartridges from the British Purchasing Commission.

[s] T. F. WERME, *Engineering Supt.*

TFW: H

A copy of this letter is attached hereto as exhibit No. 15.

In February 1941 a representative of the A. C. Spark Plug Company, which Company had just undertaken to make machine guns for the United States Government, visited Remington Arms Company for the purpose of procuring aid from Remington in the development of a primer for test ammunition used in such guns. (See letter of February 7, 1941, P. B. Rutherford to E. C. Hadley, attached hereto as exhibits No. 16.)

Immediately following this visit to Remington, and on February 10, 1941, Mr. Greene advised the officials of Remington that in the event the use of tetracene was contemplated in the priming composition to be used in the test ammunition, they should remember that under their contract with Rheinisch-Westfaelische Sprengstoff, A. G., tetracene priming could not be used in ammunition sold to the British Government or to any of the countries of the British Empire. Mr. Greene's letter reads as follows:

Digitized by Google

cc: Messrs. D. F. Carpenter, W. T. Ashcroft, J. H. Chasmar, H. R. Dorr, C. M. Holden.

BRIDGEPORT OFFICE,
February 10, 1941.

To: Mr. E. C. Hadley.
From: Mr. A. J. Greene.

Re Tetracene primed military ammunition.

Reference is made to Mr. Rutherford's letter received by us February 7th, Subject: "Visit to Remington Arms Company of Mr. Fitzgerald, A. C. Spark Plug Company." This letter indicates that the use of non-corrosive priming for test ammunition may receive serious consideration, the object being to eliminate the work and expense of barrel cleaning after tests with chlorate primed ammunition.

In the event that the use of *tetracene* in such noncorrosive priming is contemplated, attention is invited to the following requirements of our tetracene contract with R. W. S.:

1. Tetracene priming cannot be used in ammunition sold to the British Government or to any of the countries of the British Empire.

2. With respect to sales of tetracene primed military ammunition, we pay a royalty of one percent of our net selling price, and the royalties thus paid are not included in the maximum of $250,000, which is payable with respect to commercial ammunition.

A. J. GREENE, *Patent Attorney.*

cc: D. F. Carpenter, W. T. Ashcroft, J. H. Chasmar, H. R. Dorr, C. M. Holden.
AJG/hb

A copy of this letter is attached hereto as exhibit No. 17.

As appears from a letter written by Mr. A. A. Dicke, former vice president of the Remington Arms Co., on July 2, 1931 (exhibit No. 18), Remington has concluded that its contract with Rheinisch-Westfaelische Sprengstoff, A. G., precludes Remington from selling any military ammunition containing tetracene in the Irish Free State even though no patents with respect to tetracene have been issued in the Irish Free State. I quote from this letter:

NEW YORK OFFICE,
July 2, 1931.

Mr. F. J. MONOGHAN,
29 Warren Street., New York, N. Y.:

This is in answer to your telephone inquiry as to our right to selling tetracene primed ammunition in the Irish Free State.

There is no patent for tetracene in the Irish Free State and we think it is too late for a patent to be secured there. However, our contract with R. W. S. dated November 14, 1929, includes the following provisions as paragraph III:

"(d) REMINGTON shall not sell military ammunition containing any tetracene in Germany and in any or all of the countries comprising the British Empire."

My connclusion is that this provision precludes our selling tetracene primed military ammunition in the Irish Free State.

A. A. DICKE, *Vice President.*

AAD/g

Although Remington is obligated by its agreement with Rheinisch-Westfaelische Sprengstoff, A. G., not to sell military ammunition containing tetracene in any of the countries of the British Empire, this restriction does not apply to nonmilitary ammunition. Accordingly, Remington has regularly sold nonmilitary ammunition containing tetracene in England and Canada, as appears from Remington's "royalty" statements attached hereto as Exhibit 19. "Royalties" on sales of nonmilitary ammunition containing tetracene in Canada were paid by Remington to Rheinisch-Westfaelische Sprengstaff, A. G., for the benefit of Canadian Industries, Ltd., but "royalties" on the sale of nonmilitary ammunition containing tetracene in England were paid by Remington direct to Imperial Chemical Industries, Ltd. Presumably, this nonmilitary ammunition containing tetracene was used for shooting grouse, quail, ducks, and for target practice. But Remington may not sell ammunition containing tetracent to Great Britain for the purpose of shooting Germans. Such sales are verboten by the agreement with Rheinisch-Westfaelische Sprengstoff, A. G.

Digitized by Google

Although Remington is obligated by its agreement with Rheinisch-Westfaelische Sprongstoff, A. G., not to sell military ammunition containing tetracene in various other Europen and Asiatic countries, including Italy and Japan.

Remington's authority to sell military ammunition containing tetracene in Holland, Switzerland, Austria, Hungary, Czechoslovakia, Sweden, Spain, Rumania, and Italy is discussed in correspondence between Remington and Edmund von Herz of Rheinisch-Westfaelische Sprengstoff, A. G., in 1930. Mr. von Herz wrote Mr. Dicke, former vice president of Remington, under date of June 26, 1940, as per exhibit No. 20 attached hereto. I quote from a translation made by the Department of Justice:

KOELN-DELLBRUECK, *June 26, 1930.*

Vice President A. A. DICKE,
Remington Arms Company, New York.

MY DEAR MR. DICKE: In view of the fact that we have already equipped a major part of our munitions with the new sensol-polnol priming mixtures and since towards the end of the year, after completion of the new Polnol plant at Stadeln, our entire munitions is going to be equipped therewith, I believe the time has come to start large-scale advertising of these priming mixtures for military uses. I expect to take charge of this field myself and I intend to consider at first several smaller self-sufficient European countries. I am thinking particularly of Holland, Switzerland, Austria, Hungary, Czechoslovakia, Sweden, Spain, and perhaps Rumania and Italy. I wanted to give you notice of my intentions in view of our agreement and would like to inquire whether your firm is interested in any way in the military business in those states as far as past deliveries of military munitions is concerned. Since all of the aforementioned states are presently self-sufficient, I doubt whether there is any hope for any deliveries. However, I wanted to notify you any way of the steps which I hope to take.

EDMUND VON HERZ.

Mr. Dicke replied by letter dated July 8, 1930, as per exhibit No. 21 attached hereto. I quote (as pointed out above, the Germans use the word "sensol" interchangeably with the word "tetracene"):

JULY 8TH, 1930.

Mr. EDMUND VON HERZ,
Koln-Dellbruck, Eschenbruchstrasse 80, Germany.

DEAR MR. VON HERZ: We have your letter of June 26th relative to Sensol-Polnol priming mixtures for military purposes and note that you are about to begin active propaganda for the popularization of these mixtures for military purposes in various European countries, especially Holland, Switzerland, Austria, Hungary, Czecho Slovakia, Sweden, Spain, and eventually also Roumania and Italy.

We have not sold any military ammunition to the Governments of any of these countries in a long time, if ever, and there is very little prospect that we will be able to do so except for the remote contingency of a major war, in which event, any of these countries might come to us for a part of its ammunition supply. Under our contract we have the right to sell military ammunition in any of the countries mentioned and we are, of course, not prepared to waive that right although we think the chances of making any sales are very remote.

Mr. Monaghan makes the request that in any arrangement you make with the Governments of any of these countries you provide against the export of Sensol-Polnol ammunition. Later, some of these countries might have surplus or obsolete ammunition which they would want to sell in some other country, such as a South American country, which sale would be in competition with us as well as yourselves. We hope you will not make any effort to interest the arsenals of South American countries as in many instances they also produce commercial ammunition which would be sold in competition with us: Furthermore, you will probably have to give full technical information to the Governments interested with the result that it might be used against all of us commercially.

We hope that these observations will be of value to you in the undertaking you have in mind.

Very truly yours,

A. A. DICKE, *Vice President.*

AAD/c.
CC—Mr. S. Norvell, Mr. F. J. Monaghan, Col. L. J. Hermann.

Digitized by Google

Although the agreement of November 14, 1929, between Rheinisch-Westfaelische Sprengstoff, A. G., and Remington obligates Remington not to sell miltary ammunition containing tetracene to any of the countries of the British Empire, the cartel provisions of the agreement as a whole are distinctly advantageous to Remington, for these provisions assure Remington of a monopoly of the domestic market for ammunition primed with tetracene. By reason of the November 14, 1929, agreement, in the early part of 1939 Remington was able to induce Rheinisch-Westfaelische Sprengstoff, A. G., to discontinue the shipment of primers containing tetracene to this country. The primers in question were a specialty for which Rheinisch-Westfaelische Sprengstoff, A. G., had no other use, but Remington found that their sale to police departments in this country broke Remington's market price for such primers. The complete story is told in a series of letters between Rheinisch-Westfaelische Sprengstoff, A. G., and Remington, attached hereto as exhibit No. 22. I quote from these letters:

CC—B. E. Strader, C. B. Wells, A. E. Buchanan, A. J. Greene.

BRIDGEPORT, CONN., *Feb. 8, 1939.*

To: E. C. Hadley,
From: R. C. Swan,
Subject: German primers.

The volume of German pistol primers being imported by the Pacific Gun Sight Company, San Francsco, Calif., has become quite disturbing. These are being offered at a very low price to the trade and to police departments.

I am not certain whether their price direct to police departments is the same as to dealers—namely, $2.50 per thousand, but I think it is. This price has forced us to reduce our prices on components. For a comparable primer, the list price was reduced from $4.00 to $3.80 per thousand and the discounts increased from 25–10–5% to 35–15–5%. As applied to this particular primer, our net return has been reduced from $2.57 per thousand to $1.89 per thousand or a reduction of 26.3%.

It is noted that these are brass primers which suggests the probability that the mixture is non-mercuric. Possibly they are obtained from R. W. S. or D. W. M. (Germany) or in some other way there may be an infringement of our patented priming.

Mr. Greene's attention is also called to the microscopic word "Germany" on the label with the suggestion that he investigate whether our import laws require "made in Germany" and whether the manufacturer's name must also appear.

To date several million of these primers have been imported thereby affecting our sale of components and, of even greater importance, our loaded cartridges.

Please keep us posted on your findings.

[A] R. C. SWAN.

RCS/Hu

MARCH 1, 1939.

Re: U. S. Imports of Primers Containing Tetracene.

DYNAMIT-ACTION-GESELLSCHAFT.
Nurnberg, Germany.

GENTLEMEN: Our salesmen on the Pacific Coast report the sale in California of large numbers of imported primers which we have found to contain our patented combination of Tetracene and Lead Styphnate. For your further information, we enclose the top of one of the containers in which these primers are sold; we note that it bears the word "GERMANY" but no manufacturer's name.

* * * * * * *

We would appreciate your thoughts in this matter, as well as any information you can furnish which will assist us in establishing the source of these primers and the channels by which they reach the United States.

Very truly yours,

A. J. GREENE, *Patent Attorney.*

AJG/m
c/Mr. R. C. Swan, Mr. W. O. Stauffer.

Digitized by Google

CC—J. Greene.

BRIDGEPORT, CONN., *March 28, 1939.*

To: J. C. Heath.
From: R. C. Swan.

Thanks very much for your assistance in regard to primers being imported at San Francisco.

I believe I have already told you confidentially that the mixture is a definite infringement on our patents. Through our Legal Division here the matter has been taken up with certain parties in Germany, but that has not been sufficient time to hear from them. If we can block this without showing our hand to anyone in this country you will agree that it is most desirable. I'll keep you posted on developments.

RCS/Hu

[S] R. C. SWAN.

RHEINISCH-WESTFAELISCHE SPRENGSTOFF-ACTIEN-GESELLSCHAFT,
Nürnberg, Germany, March 15, 1939.

Subject: Shipment of Sinoxid Primers to U. S. A.

REMINGTON ARMS CO., INC.,
Bridgeport, Conn.:

We wish to acknowledge receipt of your letter of the first of this month, and can say in reply that the primers mentioned by you were of D. A. G. make, and were furnished by us to a concern in San Francisco.

The first shipments were in 1938, and consisted of 2 million primers; this year we have already shipped 200,000. A further order of 500,000 has been manufactured, and is now ready for shipment.

As these primers are a specialty for which we have no other use, we would like to ask you to agree to permitting the shipment of this small order. There will be no repetition of these unimportant shipments if you consider this necessary in the protection of your interests.

In this connection we would like to point out that we have made almost no shipments to the United States for years. When we had inquiries last year for these primers, it completely escaped our attention that such shipments to the United States could not be made because of the terms of our agreement with you on tetracene priming compositions. We also have a similar agreement with England, which does not, however, exclude shipments on our part.

In any case, we would like to beg your pardon for the oversight. We are also ready to make you the proper payment for the shipments made by us.

With regard to the shipment of the 500,000 primers which we now have ready to go forward, we would ask that you let us know of your decision concerning them.

Very truly yours,

RHEINISCH-WESTFAELISCHE SPRENGSTOFF-
ACTIEN-GESELLSCHAFT,

VOSS.

Re: Shipment of sinoxid primers to U. S. A.

APRIL 6, 1939.

DYNAMIT-ACTIEN-GESELLSCHAFT,
Nürnberg, Germany.

GENTLEMEN: We have your letter of March 15th in the above matter, and note that the primers which have been on sale by the Pacific Gun Sight Corporation during the last year were actually secured direct from you.

We greatly appreciate your courtesy in promptly advising us of this fact, and your further courtesy in offering to discontinue further shipment. It is quite desirable from our standpoint that you do so. The effect upon the trade of having tetracene primers available through any other source than Remington is most undesirable. We note that you have on hand about five hundred thousand (500,000) primers which you would like to ship to the United States, chiefly for the reason that you have no other use whatever for them. This will be quite satisfactory to us, and any claim for damages which we might have due to past shipments, is hereby waived.

Digitized by Google

We are greatly pleased to have the entire matter terminated in this satisfactory manner.

Very truly yours,

AJG/m

A, J. GREENE,
Patent Attorney.

c—Mr. R. C. Swan, Mr. D. F. Carpenter, Mr. W. O. Stauffer, Mr. J. G. Heath. (See note attached.)

The January 1, 1934, amendment of the November 14, 1929, agreement between Rheinisch-Westfaelische Sprengstoff, A. G., and Remington provides that the maximum total amount of "royalties" to be paid by Remington on sales of nonmilitary ammunition containing tetracene shall be $250,000. Apparently payment of the full $250,000 has been completed or will be completed by Remington before the end of this year, as appears from a document from the files of Remington attached hereto as exhibit No. 23.

The agreement of November 14, 1929, between Rheinisch-Westfaelische Sprengstoff, A. G., and Remington (as modified by the January 1, 1934, agreement between Dynamit, A. G., and Remington which was approved by duPont) did not provide for any maximum on the total amount of "royalties" to be paid by Remington on the sale of military ammunition containing tetracene or on licenses by Remington to the United States Government or other manufacturers for the production of military ammunition containing tetracene. Hence under the agreement "royalties" on the sale of military ammunition containing tetracene or on licenses by Remington to produce military ammunition containing tetracene are payable by Remington for the duration of the patents. The "royalty" provisions with respect to military ammunition are summarized in a memorandum of the Remington Arms Company dated August 26, 1935, attached hereto as exhibit No. 24. I quote:

BRIDGEPORT OFFICE,
August 26, 1935.

To: Mr. E. E. Handy,
From: Mr. A. J. Greene, attorney.
Re: D. A. G. royalties on military ammunition.

This is in response to your request for a summary of the provisions of the tetracene contract in regard to the royalties payable on military ammunition manufactured by the United States Government under license from Remington.

The pertinent part of the contract reads as follows:

"Remington shall not, without the consent of D. A. G., license the Government of the United States or other American manufacturer to manufacture and/or sell military ammunition coming within the terms of this agreement at a royalty less than the following: (a) for cartridges, Fifteen Cents ($0.15) per thousand; (b) for primers and empty primed shells, 1 percent of Remington's net selling price of similar military primers and primed empty shells. The consent of D. A. G. to licenses at a less royalty, when necessary to the granting of profitable licenses, will not be unreasonably withheld.

One-quarter (¼) of the royalty received by Remington from the Government of the United States or other licensee with respect to military ammunition shall be paid to D. A. G.

Strictly construing the language of the contract, Remington would not be entitled to license the United States Government at all (at a rate less than $0.15 per thousand cartridges) without the consent of D. A. G. If a license at a lesser rate or a free license were granted D. A. G. would seem to be entitled to receive from Remington one-fourth (¼) of the specified rate of $0.15 per thousand ($0.0375 per thousand on the entire Government production). This would necessitate securing regular reports of Government production and a free contribution by Remington to D. A. G. of $0.0375 per thousand on such production. The same rates apply if Remington licenses another American manufacturer for military production.

The rate of royalty to be paid by Remington on its own production of military ammunition is 1% but, if necessary for the securing of substantial sales, this rate may be reduced to not less than 1/10 of 1%. The 1% rate seems to be entirely out of proportion to the $0.0375 per thousand rate payable by Remington on its license to others.

A. J. GREENE, *Attorney.*

AJG/m

Digitized by Google

These provisions of course would be very significant in the event the United States Army should adopt tetracene priming for general military use, as appears from a memorandum written by A. J. Greene of the Remington Arms Co., dated May 23, 1941, attached hereto as exhibit No. 25. I quote:

* * * * * * *

"Remington may license the United States Government and other American manufacturers at a royalty of fifteen cents (15¢) per thousand (1,000) cartridges and one per cent (1%) of Remington's selling price of primers. D. A. G. may consent to lesser royalty. One-fourth (¼) of the royalties received by Remington under such licenses are payable to D. A. G.

"The above rates are reduced to one-half (½) after May 25, 1943, and continue at the one-half (½) rate until November 29, 1949, unless the tetracene content exceeds four per cent (4%) of the mixture, in which event no royalties are payable after May 25, 1943.

"Attention is particularly invited to the provisions with respect to royalties on production by the United States Government or American manufacturers other than Remington. These provisions should be brought to the attention of the Ordnance Department for their consideration in determining the desirability of adopting tetracene priming for general use, and before further royalty payments to D. A. G. or its subsidiary we should obtain the approval of the United States Department of Justice."

The so-called "royalties" payable by Remington under the agreement with Rheinisch-Westfaelische Sprengstoff, A. G., with respect to both military and non-military ammunition, are in fact payments of the purchase price of the patents. As already pointed out, Remington is not licensed under the United States tetracene patents but actually owns and has full title to these patents. Recognition of this fact appears in a memorandum written by A. J. Greene, of the Remington Arms Co. dated December 10, 1940, attached hereto as exhibit No. 26. I quote:

BRIDGEPORT, CONN., *December 10, 1940.*

To: Mr. Thomas A. Wilson.
From: Mr. A. J. Greene.
Re: Patent licenses.

Reference is made to your letter of December 5. Your request is in two parts:

1. *A list of all United States patents licensed to Remington from foreign owners.*

Remington has no licenses under patents owned by or issued to any foreign persons, firms, or corporations. However, Remington pays royalties to Rheinisch-Westfaelische Sprengstoff, A. G., Nurnberg, Germany, under two patents *purchased* from them some years ago. These patents relate to Tetracene Priming for ammunition. They are Rathsburg, Re-Issue No. 17,540, Dec. 31, 1929 (Original No. 1,586,380, May 25, 1926); Von Herz & Rathsburg, No. 1,889,116, Nov. 29, 1932.

The royalties paid this year will be of the order of Twenty-Five Thousand Dollars ($25,000). The contract provides for a maximum royalty for commercial ammunition which will be reached some time next year. As to military ammunition, royalties are payable until the expiration of the patents, there being no maximum.

* * * * * * *

CONCLUSION

Remington's faithful adherence in 1941 to its agreement with Rheinisch-Westfaelische Sprengstoff, A. G., not to sell military ammunition containing tetracene to the countries of the British Empire may readily be understood when the close commercial relationships that have existed between the two companies are borne in mind. The intimate character of these relationships is set forth in a letter written by A. A. Dicke, former vice president of the Remington Arms Co., on May 13, 1929, to Mr. Norvell, then president of the Remington Arms Co. A copy of this letter is attached hereto as exhibit 27. At the time this letter was written Mr. Dicke was at Cologne, Germany, engaged in negotiating the tetracene cartel agreement with Rheinisch-Westfaelische Sprengstoff, A. G. I quote from Mr. Dicke's letter:

COLOGNE, GERMANY, *Monday, May 13, 1929.*

DEAR MR. NORVELL: I have been wanting to write you for some days, but it has simply been impossible. We have been entertained to the limit. The little time we were left alone was urgently needed for sleep—and little enough of that.

We arrived here from London Sunday, May 5th. We were met at the station by Mr. and Mrs. von Herz and also by Mr. and Mrs. Axelrath, who made a special

Digitized by Google

trip down here from Hamburg. They took us motoring in the afternoon, and in the evening we all had dinner at the home of Mr. & Mrs. von Herz.

The next morning (Monday) we had a short meeting with Dr. Muller, president of the R. W. S. and allied companies. He invited Mr. Monaghan, Mr. von Herz, and myself to dinner at his home that evening. That certainly was a treat. You can imagine the rare wines, champagnes, foods, etc., not to mention some 1828 Cognac which was used to drink a special toast to the friendship of the two companies and to the success of our plans for cooperation to mutual benefits.

Dr. Muller is about 50 and is a large owner in the business. The Mr. Schmidt who was in America lately to organize the American associate of the I. G. chemical trust is his brother-in-law. I think Mr. C. E. Nu is in that project. Dr. Muller also is friendly with Dr. Mites. He is also well acquainted with the Duponts, who usually stay at his home here when they are in Cologne. He is also close to your friend, Sir Harry McGowan, of the I. C. I. He recently invited the Mullers to the forthcoming marriage of his daughter. I am merely mentioning this to give you some idea of his standing here and elsewhere. He is the moving spirit in the cartridge-company mergers here, as well as the explosive and detonator company mergers, and he told us of his plans for an early merger of the German celluloid companies, which will be the forerunner of a European combine.

His reception of our general suggestions on commercial cooperation was most enthusiastic. We told him of our hopes of doing something, but pointed out the difficulty of doing anything much without the cooperation of other American manufacturers, and particularly the French and Belgians. He acknowledged the difficulties, but made suggestions which to me seemed to be an answer to the difficulties. The whole thing is too long and too complicated to expound in this letter, but we discussed such questions as understandings on prices, interchange of credit information, discouragement of local factories in our export markets, cooperative opposition to high tariffs in export countries, cooperation in securing removal of restrictions against arms and ammunitions, etc.

That afternoon we had visited their detonator plant at Troisdorf, where we were entertained at luncheon at the employees' clubhouse—which, incidentally, is a wonderful place. It is like a very large residence with furnishings such as one would expect to find in the finest homes. The Troisdorf plant, as well as the one in Nurnberg and at Stadeler (now Nurnberg), are beautifully laid out. The gardens resemble a park with trees, shrubs, and lawns. Most of the factory buildings are one story, well constructed, and well lighted. We were very much impressed with the offices of the various executives. Even the minor executives have excellent offices. For example, Dr. Rathsburg, whose position corresponds to that of our Dr. Hutchinson, has an office about 3 times the size of Mr. Strugnell's, with rugs on the floor, curtains at the windows, and every possible convenience, whereas Dr. Hutchinson and his corps of chemists are housed in a low building with a flat roof, where the temperature in summer is unbearable, with R. R. engines outside belching smoke and dirt, and, to make matters worse, prime drop testing is done a few steps away in the same building, making thousands of sharp, violent reports each day. To make matters still worse they have the pattern shop in the same building. When I see how such things are done here I wonder how we can expect scientists to do research work under such conditions. The best men could not accomplish anything even if they would stay long enough to get started.

As far as my own office in N. Y. is concerned, I haven't seen anything like it here.

I have arranged for a photograph of the laboratory which will show the general lay-out.

What I have seen here strengthens the view I have always held that we do not do enough research and development, especially in Bridgeport. "Penny wise and pound foolish" I often think.

On Tuesday we went to Nurnberg (8 hours on best train)—von Herz went with us. Here we were received by Mr. Voss, the new director of the ammunition division, Mr. Lesissler, chief engineer, whom you met with Mr. Herz in N. Y. The next day Mr. Karl Genchow, head of the old Genchow arms & ammunition organization (now affiliated with R. W. S.), and his export manager, Dr. Seebach, came to Nurnberg to meet us. On Thursday morning we had a general talk, and then, it being a holiday, they took us to Rothenburg, which city you have probably seen. The rest of the week was devoted to sales questions, tests of tetracene-ponol primed ammunition, and seeing their plants. The tests impressed me very much. I sent details of new mixtures to Bridge-

Digitized by Google

port by week-end cable. I saw the entire operation and the tests, and I am sure Bpt. will get the same good results if no personal predilections are allowed to come in.

As to technical matter, I expect soon to write to Col. Hermann, but I do want to say this much: I have now seen Nobels plant and R. W. S.'s, and their equipment is fully up to ours, if not some better. We really have little or nothing to feel puffed up about, and we can learn something from them. Their low mfg. costs are not due merely to low labor costs (probably 60% of ours when insurance, etc., is included), but to the use of equipment fully as good as ours. Both Nobels & R. W. S. are working on quality and we will have to improve ours if we want to hold our own.

In the talks on sales matters it has developed that Genchow may want to handle our air rifle, our Model 11 shotgun (F. N. can not make deliveries on account of military work), and other items. They have given us information on available orders for military ammunition. We will take this up with Rugge. Will write more soon.

[Henday.]

A. A. DICKE.

P. S.—Tuesday, May 14. I was so sleepy last evening I had to close and go to bed. Now I will continue. We returned here (Cologne) from Nurnberg yesterday. Will have a meeting here today with R. W. S and 3 men from Nobels. Laing will speak also for Dominion. * * * We picked up many little bits of valuable information here. I am more than ever convinced that we shou'd work more closely with our competitors here. There is as much reason for being personally acquainted with our competitors in our world markets as that we know our U. S. competitors.

Nobels and also Dr. Muller seem to know a great deal about Western—some of which information may have come from Dupont. They seem to think that Western wants to be bought up and that their actions are designed to increase their nuisance value. Muller said that he thought we could all save money if we bought them up. I told him we could not do so on account of the Sherman Law and he offered to do it for us. These thoughts are passed on to you for what they may be worth. They may fit in with other information you have on hand. Western's price-cut is costing us about $1,000,000 a year, which is the interest at 6% on $16,000,000.

I think I am "sitting pretty" in the meeting today. We hold the option on tetracene which includes *exclusive* rights for *military* in all American countries except Canada. Nobels wants military rights in S. American and so does R. W. S. if and when the provisions of the Versailles treaty are relaxed. I expect to trade this for rights in England and Canada and possibly get a royalty on military sales in Mexico & S. A. countries.

Well, I must close, as Mr. von Herz has arrived. By the way, I spoke to him about the matter which arose between Dominion and us over polnol. He explained the situation to my entire satisfaction. It was a misunderstanding committed by Mr. Eslhbach, one of the other R. W. S. men. So long—

A. A. D.

The advantages of tetracene have already been pointed out. Remington recognizes these advantages. The fact that the Process Division of Remington recommended that tretracene be used in certain ammunition sold to the British Purchasing Commission is evidenced by exhibit No. 14, already submitted, wherein Mr. Greene stated:

"We understand that the Process Division have recommended the use of tetracene priming in certain ammunition to be sold to the British Purchasing Commission. It appears obvious that this should not be done."

The dollar value of ammunition containing tetracene sold by Remington increased from approximately $325,000 for the 3-month period January 1, 1934, to March 31, 1934, to $3,550,000 for the 3-month period April 1, 1941, to June 30, 1941 (from exhibit No. 28, compiled from exhibit No. 19).

Remington's "royalties" payable to Rheinisch-Westfaelische Sprengstoff, A. G., on the sale of ammunition containing tetracene increased from approximately $3,000 for the 3-month period January 1 to March 31, 1934, to $13,000 for the 3 month period October 1 to December 31, 1940 (from exhibit No. 29, compiled from exhibit No. 19).

To summarize, the patents in Great Britain relating to tetracene are owned by Imperial Chemical Industries, Ltd., and Remington has a license under these patents from Imperial Chemical Industries, Ltd., which is broad enough to permit

Digitized by Google

Remington to sell military ammunition containing tetracene in Great Britain. In Canada the principal patent relating to tetracene is owned by Canadian Idustries, Ltd., and Remington has a license under this patent from Canadian Industries, Ltd., which permits Remington to sell nonmilitary ammunition containing tetracene in Canada but which does not permit Remington to sell military ammunition containing tetracene in Canada. However, Canadian Industries, Ltd., has indicated that the patent under which this license was granted is invalid. In the Irish Free State no patents relating to tetracene have been issued. I do not know the patent status of tetracene in other countries of the British Empire, including the Union of South Africa, India, and Australia.

Notwithstanding the above, Remington is prohibited by its agreement with Rheinisch-Westfaelische Sprengstoff, A. G., from selling military ammunition containing tetracene to Great Britain, the Irish Free State, Canada, the Union of South Africa, India, Australia, and the other countries of the British Empire, and is also prohibited by its agreement wtih Rheinisch-Westfaelische Sprengstoff, A. G., from licensing other American manufacturers to sell ammunition containing tetracene to these countries.

In fairness to Remington it should be stated that upon the basis of information submitted to us within the past few days by counsel for Remington and upon the basis of information recently submitted by an employee of the British Purchasing Commission at the request of Remington, we do not believe that Remington's agreement with Rheinisch-Westfaelische Sprengstoff, A. G., not to sell military ammunition containing tetracene to the countries of the British Empire has in fact operated to date as a serious impediment to the Allied war effort. We shall not go into the details of the information submitted by Remington for we feel sure that Remington will wish to make its own explanations to this committee. We do believe that Remington's agreement with Rheinisch-Westfaelische Sprengstoff, A. G., demonstrates with striking and dramatic clarity the potential serious danger at this time of private cartel agreements with the I. G. Farbenindustrio and its affiliates. As Mr. Arnold has previously indicated, we believe that some legislative provision should be made for compulsory registration of all such agreements in order that they may be scanned by public authority at the present time in the light of present conditions. We do not believe that the discovery of these agreements should be left to chance. Economic alliances with the I. G. Farbenindustrio must not be permitted to handicap American industry in producing or distributing the tools of war.

EXHIBIT No. 130

MAGNESIUM

Statement by Monroe Karasik

The story of magnesium in America offers an excellent example of how complete a control over a common natural resource may be exercised through a concentration of patents. Although the sources of magnesium are virtually unlimited, since it may be extracted from sea water or from ores which are abundant and easily accessible, one company has monopolized its production in the United States between 1927 and 1941. Moreover, a German company through a patent-pooling arrangement, has held the right to limit the production of magnesium in the United States while Germany was steadily expanding her production.

DESCRIPTION AND BACKGROUND

Magnesium is of vital importance today because it is a light yet strong metal which has many war uses. One-third lighter than an equal volume of aluminum, it is the lightest metal which has physical properties adequate for structural purposes, though to be structurally useful it must be alloyed with other metals. It is easy to work hot or cold, to machine, and to weld electrically. Because of these qualities it is invaluable for parts for aircraft engines and bodies. Magnesium casing on aerial bombs means less weight and therefore more bombs per plane. Since magnesium in certain forms burns well, it is the ideal material for incendiary bombs. As magnesium burns, it gives forth an intense white light, thus making it useful in flares and in starshells. Moreover it is used in portable tools, and in parts of machinery.

According to the Bureau of Mines' estimates of the world production of magnesium, German production increased from 12,080 metric tons in 1937 to 19,000

Digitized by Google

tons in 1940, while the production in the United States amounted to 2,059 tons in 1937, and 5,680 tons in 1940. Germany produced 61 percent of the world production of magnesium in 1937 while the United States produced 10 percent. Even in 1940, the year which saw the fall of France, Germany was still producing almost one half of the world's production while the United States was producing but 14 percent.

It has been estimated that the aircraft industry used about 80 percent of the magnesium alloys produced in the United States in 1939 and 1940. Of this, about 60 percent was in construction of the engine, and the remainder in airframe and wheels. Magnesium-alloy sheet was produced for the first time in 1939 for such interior parts of airplanes as walls, floors, seat and berth members, partitions, doors, and other secondary structures. The more important of the other industries using magnesium alloys are the automobile, the portable and high-speed equipment, the tool, and the textile industries. In general magnesium is employed for similar uses abroad. The aircraft industry takes most of the metal. However, in Germany, and perhaps in Japan, it has been substituted for other metals in a number of uses. Recent German uses for magnesium are reported to include telephone switch parts, bus bars, aerial bombs, engraving plates, and instruments.

Magnesium metal was first produced commercially in the United States in 1915. Before that Germany supplied practically all of the world's requirements. By 1918, at least eight enterprises had undertaken magnesium production in the United States, spurred on by the ready availability of raw materials and the price of $5 per pound for the metal. One of these companies was the American Magnesium Corporation which became a subsidiary of the Aluminum Co. of America in 1919. By 1920, through consolidation or elimination, there were only two companies producing: the Aluminum Co., or Alcoa, and the Dow Chemical Co. From 1920 to 1927 these two companies, in no way dependent upon each other—either for raw material, for patent privileges, or for outlets for products—continued to produce magnesium. The total output tripled, and the price fell from $1.60 in 1920 to 55 cents per pound in 1927.

Magnesium chloride, the raw material used by the Dow Chemical Co., was a byproduct in the process by which Dow obtained certain chemical products for which its business was originally founded. In fact, the magnesium chloride had actually to be disposed of at a substantial loss, if it were not processed for the production of magnesium metal, in order to avoid contamination of the water supply of cities near Dow's plant at Midland, Mich. The Dow process electrolyzed the magnesium chloride obtained from underground brines. The Alcoa-owned American Magnesium Corporation used magnesite ores as a raw material.

EARLY DOW-ALCOA RELATIONS

The competitive struggle between the two companies was apparently hard on both of them, and in 1927 the American Magnesium Corporation discontinued the production of magnesium and thereafter purchased the metal it needed from Dow. It is interesting to see how this arrangement came about.

It must be remembered that Alcoa had a huge investment in plant and equipment in the aluminum alloys business which stood to suffer from a substantial expansion of the use of magnesium-alloy products. If substitution of magnesium for aluminum were inevitable, then Alcoa wanted to provide the substitute, but it obviously had no such eager interest in stimulating the demand for new uses for magnesium-alloy products as did Dow.

In 1926, the Dow Co., trying to expand the use of the metal, progressively reduced the price per pound from around 90 cents to between 55 and 60 cents. Alcoa was then faced with strong domestic competition, and it was beginning to fear foreign competition from Germany. A memorandum dated December 16, 1926 (exhibit No. 1), written by the superintendent of Alcoa's magnesium operations, Mr. H. E. Bakken, stated the problem as follows:

"* * * a magnesium business can be maintained and a foot in the door be kept by the Aluminum Company of America against the future without loss to the Aluminum Company of America. Should the future change the present aspect of magnesium insofar as the aluminum vs. magnesium situation is concerned, then a very favorable position could have been maintained without loss to the Aluminum Company of America.

"If we purchase metal from Dow, we presumably would eventually obtain an exclusive contract. In such an event we would remove from the present American market the price-cutting competition. On the other hand, we will sooner or

Digitized by Google

later have to face competition from abroad either by direct imports or by manufacture in this country.

"Prices in Germany at the moment are alleged to be on the same volume basis as aluminum. If such a price condition should obtain in this country, our position with the Dow Company in a combination might be a serious handicap because of two companies striving to profit from a small-profit business. On the other hand, it might result in a great advantage."

After deciding that Dow's cost of production was lower than its own, the Alcoa-owned American Magnesium Corporation, or A. M. C., approved Bakken's suggestion that "Metal can * * * be bought at such a schedule of prices based on yearly tonnage that we could as a selling and fabricating company resell ingot and fabricate without domestic competition" (exhibit No. 2). At sometime during the late summer of 1927, it entered into what S. K. Colby, A. M. C. official, called an "arrangement," and what Arthur V. Davis, chairman of the Board of Alcoa, called a "scheme" with Dow, whereby it purchased all its requirements of magnesium from Dow, and at a preferential price (exhibits Nos. 3 and 4).

It should be noted that although A. M. C. ceased production at this time, it continued to fabricate magnesium. At the same time that the purchase agreement was signed, Dow and A. M. C. entered into a cross-license agreement concerning certain patents which each owned. By the terms of this agreement, A. M. C. could use Dow patents only on metal supplied by Dow, and some restrictions were placed on Dow with respect to its operations in the fabricating field. Whether these restrictions applied to its price policy or its output policy, or to both, is uncertain. A. M. C. was also free to import metal.

Meanwhile, the German interest in the American magnesium market was being revived. Some time in 1928 or 1929, I. G. Farbenindustrie, the great German dye-trust, and producer of magnesium, effected contact with Alcoa, and by January 18, 1929, S. K. Colby, writing to vom Rath of American I. G., (I. G. Farbenindustrie's American offspring, now known as General Aniline and Film Corporation) was able to summarize their discussions in the following manner:

"Confirming our several conversations regarding the desirability of an entente cordiale between our respective companies, but more particularly referring to the possibility of a mutual interest in the manufacture of metallic magnesium to which the Dow Chemical Company of Midland, Mich., must be a party * * *" (exhibit No. 5).

Arrangements were made to have an independent engineer examine the production methods of both Dow and I. G., in order to determine the difference in cost of production if the I. G. process were used in the United States.

The report of this independent expert showed that there was a reasonable probability that the I. G. process could be commercially used in the United States (exhibit No. 6). When Dow and Alcoa representatives met in Detroit on or about December 19, 1929, according to Bakken's memorandum of that date (exhibit No. 7) to discuss that report, Dow was quite loath to enter into any relationship with I. G. Several plans defining future relationships between Dow and Alcoa were discussed at the meeting. The most significant of these was one by Dr. Zay Jeffries, at that time head of Alcoa's research department:

"(Dr. Jeffries') plan," the memorandum reports, "is based on the consideration that if the magnesium business does not exceed 5,000,000 pounds per year we have no great interest in it. If, however, it becomes a greater business than is indicated by the above figure then we are interested not only in fabrication but also in production. Dow is about committed to the production figure given above and hence should be permitted to exploit that production without interference. In the interim we would buy metal as a preferred customer and continue development of its use. Other people might also carry on development (a selected few); we would, however, be protected by a favored pig metal price, or we might undertake the exclusive development of further metal use. When the 5,000,000 pounds per year production becomes market demand then we would arrange to share the production benefits with Dow while maintaining our fabrication benefits and even perhaps sharing them with Dow."

Dow, apparently was quite amenable to remaining A. M. C.'s supplier of metal, the same memorandum going on to state:

"Dr. Dow regards magnesium pig metal as a chemical and would like to sell large quantities of it to a few substantial customers. He does not look with much favor on developing its use except as he is forced to do so to sell the quantity of metal he has capacity to make."

Digitized by Google

So we see that the noncompetitive relationship between Alcoa and Dow was maintained, although the attempt to nullify the possible competition of I. G. was frustrated by Dow's refusal to participate in a joint production scheme.

I. G. FARBEN-ALCOA NEGOTIATIONS

This, however, did not prevent Alcoa from having further negotiations with I. G. A memorandum prepared by G. A. Hendrie, (employee of I. G.'s New York agent, Chemnyco, Inc.) dated November 26, 1930, speaks of "the recent Berlin negotiations when Mr. Arthur Davis of the Aluminum Co. was present" (exhibit No. 8). These negotiations appear to have been based upon careful study and consideration by Alcoa. A memorandum dated December 3, 1930, setting forth the basis of the negotiations is quoted in full in Bakken's report of January 24, 1931 (exhibit No. 9). An I. G.-Alcoa partnership in producing and fabricating magnesium was proposed. Bakken's report is a thorough study of the strong and weak points of such a combination in recommending that "a company formed of I. G. and (Alcoa) should, for the present at least, purchase metal from Dow." He concludes that "* * * a development business such as the magnesium business promises to be for a number of years will thrive best in a noncompetitive situation."

The negotiations with I. G., according to Alcoa President Roy Hunt's letter of March 12, 1931, to Hermann Schmitz, managing director of I. G. (exhibit No. 10), culminated in certain "definite understandings arrived at and agreed to by you and your associates on behalf of the I. G. Farbenindustrie and by me and my associates on behalf of the Aluminum Co. of America with respect to the production and fabrication of magnesium."

The understanding referred to, as outlined in the same exhibit, contemplated the formation of a patent licensing company to which would be transferred the relevant patents of both parties, and the formation by either or both of a magnesium production company, the capacity of which would be subject to limitation by I. G. Farben. Hendrie's memorandum of March 10, 1931 (exhibit No. 11), assumes that the production company would not start producing before January 1, 1933. It also indicates I. G. recognition of the fact "that there will be eliminated, to a certain extent, (fabricating) competition to Alcoa * * *."

THE ALIG AGREEMENT

By October 23, 1931, the Alig agreement, a formal document more fully covering the "understandings" between I. G. and Alcoa, was signed (exhibit No. 12). Acting under its terms the parties later formed the Magnesium Development Corporation, and to it transferred their magnesium patents. It should be noted that this agreement also had the effect of giving the I. G. shares in this patent holding company the exclusive right to limit output under whatever licenses might be granted above 4,000 tons per year. At the November 20, 1931, meeting of the interested persons, according to the Duisberg-Hendrie memorandum of November 21, 1931 (exhibit No. 13), it was agreed that Dow be informed of "the consummation of the agreement between the I. G. and Alcoa in the magnesium field * * *" and that "* * * Dow will be informed that it is our intention to create the most friendly relation with Dow. We are open to all of Dow's suggestions regarding cooperation. A three-party agreement, however, seems to be excluded by the Anti-Trust law." Mr. Dow was so informed on January 7, 1932 (exhibit No. 14).

DOW IS BROUGHT INTO THE FOLD

Negotiations were carried on between M. D. C. and Dow in March and April, 1932, with a view toward licensing Dow under the M. D. C. patents, but none of the proposals made were mutually acceptable (exhibit No. 15). Both sides had some patents on metal production techniques, but neither could be blocked in production by the patents of the other. The numerous patents held by each side on fabricating processes and alloy compounds were of greater strategic importance. I. G. Farben's Dr. Schmidt found in his interviews with prospective fabricating licensees under the M. D. C. Patents, that they "felt that there was no justifiable reason in paying tribute to M. D. C. when the metal had to be obtained and supplied by Dow" (exhibit No. 16). He believed that the only way of obtaining a monetary return on the M. D. C. patents, considering the

Digitized by Google

low cost of Dow's magnesium production, was to form a combined producing and fabricating company, and compete with Dow on the fabricated articles, which could be produced more cheaply by the M. D. C. forces (exhibit No. 17).

This, of course, would not at all suit Alcoa's book. Not only would it call forth the competition sought to be avoided, but it would bring into being a new magnesium producing unit in the United States. Obviously something had to be done to resolve the Dow-I. G. situation.

Alcoa regarded a patent infringement suit against Dow as the most effective course. W. D. Keith, Alcoa patent attorney, in his letter of May 25, 1932, to M. D. C. vice president Duisberg (exhibit No. 18) explained:

"Dow is either going to play with us or is not going to play with us. If they do not play with us, we have two courses before us. One is to enter into an oral argument over the entire industry with Dow. The result of this argument would simply be that a great deal of time, paper and energy would be wasted to no particular effect. The other course is to sue Dow with two objects in view, the first object being to bring Dow to terms, the second object being to actually prosecute the suit to its logical end. As a patent company, M. D. C. has nothing to offer at the present time except patents and technical information. Since they cannot make money on their technical information without their patents, they cannot deliberately refuse to recognize an outright challenge of the validity of their most important patent structure."

And I. W. Wilson, vice president of Alcoa and president of A. M. C., in his letter of June 3, 1932 (exhibit No. 19), further urged the suit in these terms:

"* * * we can only interpret (Dow's) silence as an indication on the part of Dow to go their own way if possible without any further sincere effort to meet our ideas. If this actually is their attitude it is more or less obvious to us that the only way they can be made to realize the soundness of M. D. C.'s position would be to bring a patent suit against either Dow or one of their customers."

The suit was brought. The effect was to open a series of conferences between Dow and Alcoa representatives in the autumn of 1932 (exhibit No. 20) which contemplated a long-term agreement for the purchase of magnesium by Alcoa from Dow. Dow was well aware of the position which Alcoa claimed for itself in the magnesium industry. Cheyney, the Alcoa salesman who was one of the initiators of these talks, reports the substance of a conference with Collings, the Dow board member:

"Consequently (Collings) could certainly not expect us to spend a lot of energy and a lot of money in the development of a product on which we had anything short of a firm hold. He agreed that this point is quite sound" (exhibit No. 20).

And Dow appeared to be willing to assist Alcoa in obtaining this "firm hold." Cheyney later on (exhibit No. 20) reported that Dow, through Collings, had proposed entering into "some sort of a long term contract by which the Aluminum Co.—or one of its affiliates—would become the exclusive distributor for Dow magnesium * * *."

At about the same time, according to the Hendrie memorandum of October 5, 1932 (exhibit No. 21), M. D. C. took "a new view on the question of issuing fabricating licenses. They are in agreement with the Alcoa organization that no effort should be made to sell fabricating licenses; that the best development of the patent situation is through a joint company marketing finished articles."

I. G. looked upon the Dow negotiations not unfavorably at first, but suggested the setting up of a pilot production plant as an offset to the danger of becoming entirely dependent on Dow as the only source of supply (exhibit No. 22; November 15, 1932). Later on, as it realized the probable effect of the proposed purchase agreement upon its plan to obtain revenue from the M. D. C. patents, and its plans to go into the production of magnesium, it objected quite strenuously. In its letter to Duisberg of December 23, 1932 (exhibit No. 23), it sets forth its understanding in the following language:

"We understand that under the purchase agreement, the American Magnesium Corporation purchases magnesium from Dow and that the Magnesium Corporation manufacturers and sells magnesium products. Since according to the (Alig) agreement the American Magnesium Corporation, as a subsidiary of Alcoa, does not pay any fees for the use of other manufacturing patents to M. D. C., neither the M. D. C. or ourselves will receive any compensation in this case.

"In case this agreement is carried out and in case the demand for magnesium increases, Dow will be able to prevent through further price reductions the

Digitized by Google

production of magnesium by Alcoa and I. G. * * * Dow * * * and Alcoa will benefit while * * * our experiences and patents are being used without compensation by the M. D. C. in the American market."

In fact, I. G.'s opposition was so strong that it thought it might be best to sell out to Alcoa its entire interest in M. D. C. (exhibit No. 24).

But, apparently, Alcoa had prepared itself for an offering of a quid pro quo to I. G. As early as November 18, 1932, "Alcoa (was) willing to accept (I. G.) as a 50–50 partner in the fabrication as well. Plans have already been drawn up with a 50–50 participation in the American Magnesium Corporation" (exhibit No. 25). The reasoning was that if I. G. could not obtain revenue from the M. D. C. patents, it could share in the profits of a fabricating company purchasing its material at a low price, and able, as Schmidt pointed out to fabricate magnesium more cheaply than its competitors. And remember that the groundwork for this proposal had already been laid in M. D. C.'s "new view on the question of issuing fabricating licenses," already referred to.

It appears that in late January or early February of 1933, Wilson of Alcoa and Duisberg of M. D. C. went to Germany and negotiated the contract of February 8, 1933, with I. G. (exhibit No. 26). By this contract Alcoa and I. G. agreed to become 50–50 partners in A. M. C. Paragraph twelfth of this contract, however, was an express consent by I. G. to the Dow-A. M. C. purchase contract negotiations.

The partnership of I. G. and Alcoa in A. M. C. was a wholehearted one. One of the early steps undertaken to cement this intimate relationship was the employment by A. M. C. of one of I. G. Farben's magnesium experts, Heinz Menking. This was facilitated by I. W. Wilson, in his capacity as vice president of Alcoa (exhibit No. 27, Wilson to United States Consul, March 18, 1933), I. G.'s interest in Menking's employment is indicated in Duisberg's cable to Hochswonder, president of M. D. C., dated August 4, 1933 (exhibit No. 27a), wherein it was suggested that Menking's ideas of the salary he was to obtain at A. M. C. be discussed with I. G. directors, Pistor and Schmidt.

Menking, as an A. M. C. employee, was useful to I. G. In response to a request in 1934 for a summary of the extent of the uses of magnesium in American aircraft engines (exhibit No. 28, I. G. to A. M. C., September 21, 1934), Menking prepared and sent to I. G., on March 15, 1935, a concise tabulation naming the parts of particular engines fabricated from designated magnesium alloys (exhibit No. 29). Engines manufactured by seven different American concerns were listed. Evidently A. M. C. officials felt that these disclosures went beyond the ordinary bounds of collaboration, since, on May 27, 1935, Vice President Norton wrote to I. G. asking it to consider the information furnished by Menking as "extremly confidential." Norton's expressed reason for this request was that "it is customary in the United States never to use information of this sort in publicity without the written approval of the company whose product is mentioned" (exhibit No. 30).

A. M. C. was sensitive of the complications caused by Menking's German citizenship. President Harvey in a letter of October 20, 1936, to Los Angeles Sales Manager W. C. Lynch, wrote:

"We are not particularly keen to ask for (War Department) permission (for Menking to visit aircraft factories) inasmuch as it would throw into the open the fact that Mr. Menking is a German citizen and in our employ" (exhibit No. 31).

However, full use was made of Menking's talents in connection with the interchanges of information between I. G. and A. M. C. He was one of those who met and discussed technical problems with I. G. representatives (exhibits Nos. 32 and 33). He also accompanied German engineers (whose plants he had visited) (exhibits Nos. 34, 35, and 36), on their visits to American aircraft plants although the Navy Department sometimes refused him permission to inspect these plants, while it permitted the entry of the German engineers (exhibit No. 37). Just why the Navy exercised this discrimination against Menking is somewhat obscure, since, as late as June 22, 1938 (exhibit No. 38), I. G. apparently regarded Menking as a full-fledged German citizen, subscribing its letters to him with the complimentary closing proper in such cases—"Heil Hitler!"

Another restriction on the magnesium industry of the United States was effected by paragraph ninth of the contract of February 8, 1932 (exhibit No. 26). By its terms, "Alcoa and I. G. agree that they will not start or undertake any fabrication of magnesium in the United States of America and its de-

Digitized by Google

pendencies outside of A. M. C. except upon request of A. M. C." The effect of this clause was to prohibit I. G. from independently entering the fabrication field in the United States, and thus part of the foreign competition, foreseen by Bakken, was eliminated.

The remaining danger—that of competition in production by I. G.—was eliminated when the 5-year purchase contract between A. M. C. and Dow was signed on June 24, 1933 (exhibit No. 39). The price scale ran from 23½ cents per pound to 19 cents per pound, and Duisberg had written to I. G., in his letter of January 14, 1933, that

"Dow was willing from the beginning to make a price of 24¢ per pound decreasing to 19¢ per pound (almost exactly the price calculated by I. G.), if the sales would amount to 1,500,000 pounds within five years. This price scale eliminated the * * * argument * * * that the I. G. could produce cheaper in its pilot plant than Dow" [exhibit No. 39A].

CONTROL OF POSSIBLE DOW PRICE COMPETITION

This purchase agreement also removed some of the competition between Dow and A. M. C. in the sale of fabricated articles. What was described as a "Most Favored Nation" clause, provided that the A. M. C. would receive "the benefit of the then prevailing lowest net price made by (Dow) to any of its customers in the United States." In the sale of fabricated products, Dow was to compute the prices charged on the basis of a prescribed formula. One element in this formula was the "fair cost" of fabrication which was defined. The components of this were subject to check by independent auditors in order to assure A. M. C. that Dow included the same cost elements as did A. M. C. The pricing formula included the price of the metal used in the fabrication and included profit at a specified rate. If Dow charged itself (in its fabricating operations) a metal price lower than that at which A. M. C. was currently being supplied, then A. M. C. was to have the benefit of a correspondingly reduced metal price. Thus whatever Dow's actual cost of fabrication was, the price at which it sold the fabricated article could never be lower than the price at which it sold the raw metal to A. M. C.

The reason for the insertion of this clause can be seen from the following correspondence. For example, a letter of December 9, 1932, from Alcoa to I. G. states:

"Our main worry is that Dow in selling its manufactured products will figure magnesium at the same price at which it is sold to us. In order to protect us against this danger, we have inserted a special paragraph * * *" (exhibit No. 40).

The December 23, 1932, letter from Wilson to Hendrie (who had then become Secretary of M. D. C.) (exhibit No. 41) states that "Mr. Dow seems to recognize the fairness of some protection to us to cover Dow's sale of fabricated or semi-fabricated magnesium * * *" And on December 27, 1932, Wilson writes to Hendrie (exhibit No. 42):

"I have been trying to think of some plan which could be incorporated into the proposed agreement which would afford us reasonable price protection in connection with Dow's sale of fabricated and semifabricated magnesium and at the same time might be acceptable to the Dow Company, as it seems to me that this is the most important point we have to cover in this pending negotiation."

On the 24th of December 1932, Wilson had written to Harvey (exhibit No. 43), asking for his comments and suggestions on the Dow negotiations, saying in part: "* * * the question of our protection, particularly in regard to fabricated and semifabricated sales by Dow, seems to present the greatest problem."

On December 31, 1932, Harvey replied (exhibit No. 44), writing:

"The real importance of insisting that this favored Nation Clause in some form apply to semi or fully fabricated products is not so much that we would by this means obtain a lower purchase price for our metal, but rather to insure that all calculations of cost are made on substantially the same basis."

DOW JOINS THE PATENT POOL

Almost immediately upon the signing of the purchase agreement, negotiations were entered into between Dow and M. D. C. relative to the cross-licensing of their respective fabrication patents. M. D. C. withdrew the patent infringement suit and a cross-licensing agreement was finally signed as of January 1, 1934 (exhibit No. 45). But the agreement was contemplated by Alcoa much earlier.

Digitized by Google

Bakken, in his "Confidential report" of May 17, 1930 (exhibit No. 46) indicates the general background of a possible relationship among the parties in these words:

"For the immediate present, with Dow as sole producer and ourselves and I. G. Farbenindustrie, A. G., following up fabrication processes and fundamental research to increase the use of magnesium, it is extremely doubtful whether anyone else would attempt to break into the magnesium business. As has been pointed out before, the two companies together would have a very strong patent situation. It is felt that this situation alone would make the entry of other interests unattractive. Even Dow Chemical Company and people whom he might interest in fabrication of magnesium would, from a patent standpoint, find heavy weather."

But when an exact study of Dow's patent situation was made, Bakken changed his mind somewhat about the heaviness of the weather Dow would encounter. Writing another of his reports, dated January 24, 1931 (exhibit No. 47), he states:

"The patents of Dow, taken as a group, are the strongest group of patents on magnesium base alloys in this country. It appears that they will cover the newly developed alloys which will be important in future years. * * * We would state that of the three parties (A. M. C., I. G., and Dow), Dow has the alloy patent situation containing the best inherent future possibilities."

And, later in the report:

"A. M. C. and Dow together own valuable heat treatment patents which effectively prevent, under present practice, the successful heat treatment of magnesium base alloys in this country [by other parties]. * * * I. G. has no heat treatment patents and is utterly without status in this country in this connection, but applications are on file. * * * The valuable heat treatment patents have now issued. It is doubtful whether any exceptionally broad heat treatment patents will issue in the future to any of the parties or to any other persons."

He concludes, after having examined all of the relevant patents of the three parties:

"It is to be noted, however, that if I. G. and Dow were to combine in their patents, a strong situation would be presented in that the combined patent structure would control the sand casting of magnesium and a great many magnesium alloys. It would also control the heat treatment of magnesium except insofar as A. M. C. is concerned.

"The strongest patent combination lies between I. G. and A. M. C., because the patent situation of these two companies are complementary. * * *"

So that, even if we were not to venture the hypothesis that the cross-license was intended to control independent fabricators of magnesium (as it in fact did), its effect was to render the three parties invulnerable to competition in fabricating.

RESTRICTION OF DOW-A. M. C. COMPETITION BY 1934 AGREEMENT

Possible competition between Dow and A. M. C. had been foreseen during the negotiations, I. G. having cabled Duisberg on September 1, 1933 (exhibit No. 48), that its approval of the proposed agreement was "contingent upon your investigation whether by this proposal Dow's ability to compete with A. M. C. on fabrication field is undesirably increased * * *"

To a certain extent this competition was eliminated by, as Keith wrote to Joslin, patent counsel for M. D. C., on September 13, 1938, "a side agreement between the parties."

"It was then arranged that all parties would issue the same type of sub-license, and that the sub-license should be royalty-free, nontransferable, and nonexclusive, and should be issued * * * '* * *' in connection with magnesium purchased from Licensor by Licensee * * *'" (exhibit No. 49).

In his letter to Duisberg of February 1, 1934 (exhibit No. 50), Keith had described this "side agreement" as "our main purpose." Earlier (January 15, 1934, exhibit No. 51) Keith had justified to Currie the issuance of such a license in the following terms:

"Such action will insure that the prospective sub-license shall have no choice as between Dow and A. M. C. on the grounds that one company is issuing a better license than the other company."

It appears that another understanding, not quite as explicit as the "side agreement" just referred to, also existed between Dow and A. M. C. with regard

Digitized by Google

to competition in fabricating. This arrangement appears to have existed at least as early as February 13, 1933, when Harvey, in a memorandum to A. C. Cooper, of the sales department (exhibit No. 52), wrote:

"The Dow Chemical Company are very active in their drive for magnesium castings business and while they would not purposely interfere with any of our sales which were going along well they might very innocently approach your customer and offer to make castings at lower prices."

The Syntron incident (exhibit No. 53) is likewise enlightening. In this case Harvey, having received a report that Dow had quoted an extremely low price to Syntron, phoned Sales Manager Grant, of Dow, and upon apprising him of the facts received a very profuse apology from Grant for the error which had been made. Harvey concludes in his interoffice memorandum of March 23, 1933, to Runnette:

"I think it has been very helpful to encounter this proposal and be able to show Mr. Grant that he has made a bad error."

OTHER RESTRICTIVE EFFECTS OF 1934 AGREEMENT

The cross-licensing agreement of January 1, 1934 was effective in controlling the activities of independent magnesium fabricators until the entry of the consent decree obtained by the Antitrust Division on April 15, 1942.

In the first place, it appears to have been Dow's practice to license only such fabricators who would, in advance, enter into a purchase contract with it. As an example, we have Grant's letter to Superior Bearing Bronze Co., of April 8, 1940 (exhibit No. 54), part of which reads:

"We are enclosing a proposed sales contract in duplicate covering your requirements for twelve-month period starting April 1, 1940. If this contract is satisfactory to you please sign and return one copy. Upon receipt of this signed sales agreement we will forward you our standard license for sand casting."

There are also other restrictive practices which Dow was enabled to effect because of its participation in the contract of January 1, 1934. One of these practices is the "stacking" of customers for the benefit of one of its licensees to the exclusion of others. An example of this practice is set forth in the memorandum of Stearns to Caple (both of Dow's magnesium sales division) of April 4, 1939 (exhibit No. 55). Stearns writes:

"* * * It is felt that if (the) Hills-McCanna representative can develop any business in (the Cincinnati) territory, that there is no reason why he should not do so. However, as you know, the Wellman Bronze and Aluminum Company have also been working on a number of customers in Cincinnati and the vicinity and has developed a certain amount of business of their own, and it is felt that it would be unwise both from our standpoint and from the standpoints of the two companies for them to compete for business in the same company. * * * It is therefore suggested that I discuss this situation with Mr. Stroebel (of Hills-McCanna) along these lines during my next visit to Cincinnati."

Dow also restricts the territory within which its licensees may operate. For instance, when a foundry in New Jersey wished to undertake the casting of magnesium, Otis Grant, Dow's eastern representative, recommended to Sales Manager Leo Grant, on April 15, 1939 (exhibit No. 56), that he "(did) not believe it would be worth while entering into a license agreement with the subject company in view of our set-up with Eclipse." Eclipse was a licensee of Dow, casting magnesium and selling it in the same area. Accordingly, Leo Grant wrote to the applicant on April 18, 1939 (exhibit No. 57), stating:

"Dow metal casting is now subject to license by our company and under the present circumstances we do not believe it advisable to extend a license at this time."

The device in the Dow license contract which enabled it to exert power over its licensees was a 1-year cancelation clause. The practice of tying the license to the purchase of metal, as set forth in Keith's letter of September 13, 1938, to Joslin (exhibit No. 49) appeared to have been a settled policy of Dow long prior to the agreement of January 1, 1934.

It should be noted that until 1941 these pooled and cross-licensed patents in the shelter of which the Dow-Alcoa-I. G. group continued to operate successfully prevented the persistent attempts of outsiders to enter the magnesium industry.

Digitized by Google

CONTROL OF MAGNESIUM EXPORTS

Moreover these patent agreements had effects not only within the United States but in the international sphere. Whether as a means of advancing German rearmament or in order to secure more favorable prices for the group by increasing Dow's sales of magnesium metal, the affiliated I. G. interests in Germany in October 1934 offered to purchase from Dow a substantial volume of metal. This order was for 350 tons in the latter part of 1934 and for 600 tons in 1935 with an option for purchases at the same rate in 1936 and 1937. An order for such a quantity representing almost 50 percent of Dow's capacity at that time and more than the total volume of its domestic sales proved attractive to Dow. Even though the price was only 20 cents per pound they accepted. This was the final contract affecting the relations of the parties. It is dated September 5, 1934, and consists of a copy of a letter from Mr. L. I. Doan, general sales manager of Dow, to Duisberg (exhibit No. 58). The contract carried the significant provision that Dow was not to export metal to any other European country during the term of the contract with the exception of a maximum 150 tons per year to Great Britain. It was also provided that the price of metal sold to Dow's British customer should not be less than 4 cents per pound above the price at which I. G. was supplied. Dow further agreed to do its best to keep the British from reselling magnesium in ingot form. Thus from September 1934 for about 2 years Dow supplied I. G. Farbenindustrie, the principal European producer, with a volume of magnesium that ran as his as 60 percent of its current output, at a net price one-third below the then prevailing domestic market price of 30 cents per pound. In this way I. G. Farben was able to use a patent pooling arrangement not only to limit production in United States but to retard the development of the magnesium industry in Europe and to keep Europe dependent upon Germany for supplies.

EFFECT OF NATIONAL EMERGENCY ON MAGNESIUM PRODUCTION

During the period of the Antitrust Division's investigation of the magnesium industry, other governmental agencies expedited the construction of additional magnesium production facilities.

The Dow Co. began to expand production in 1941, and it agreed to license and assist some other companies in the production of magnesium by its process. The British Government financed additional capacity both at Midland, Mich., and at Freeport, Tex., where sea water is used as a raw material and the United States Government through the Defense Plant Corporation is building additional capacity to be operated by Dow.

On March 6, 1941, a contract (exhibit No. 59) between the Defense Plant Corporation and the Dow Co. provided that the Dow Co. should lease a site near Freeport, Tex., and plan, construct, and equip a plant there. The Defense Plant Corporation agrees to pay not more than $8,007,407 for the buildings and machinery, which it will lease to the Dow Co. The annual rental to be paid by Dow is 3 cents per pound on the magnesium metal produced over 6,000,000 pounds and up to 18,000,000 pounds, and 8 cents per pound on the production in excess of 18,000,000 but not exceeding 36,000,000 pounds. The rental payments will end when the Government has recovered its investment. At the termination of the lease Dow will have the right to purchase the plant at a price based on the actual cost of the plant to the Government plus interest at 4 percent per year less the amount of rentals paid by Dow; or at a price based on the actual cost of the plant to the Government less depreciation and obsolecence.

On October 4, 1941, a contract (exhibit No. 60) between the Defense Plant Corporation and the Dow Magnesium Corporation provided for the construction and operation of a plant near Velasco, Tex., by the Dow Magnesium Corporation. As a fee for the management and operation of the plant and the sale of its products, the Defense Plant Corporation will pay one-half cent per pound on all magnesium metal produced in the plant. This fee may not be less than $60,000 a year unless the plant should have a productive capacity of less than 72,000,000 pounds a year, in which case the minimum fee shall be reduced by $10,000 for each reduction of 12,000,000 pounds of magnesium. The Dow Magnesium Corporation will have the right to purchase the plant at a price to be determined by arbitration.

On October 4, 1941, a contract (exhibit No. 60) between the Defense Plant Corporation and the Dow Chemical Co. provided that the Dow Chemical Co. would prepare all the plans for and give scientific advice for the operation of the plant to be operated by the Dow Magnesium Corporation near Velasco, Tex. In return,

Digitized by Google

the Defense Plant Corporation will pay Dow Chemical Co. 1 percent of the Defense Plant Corporation's expenses for the cost of the plant. But this payment may not exceed $520,000. In addition, the Defense Plant Corporation will pay the Dow Chemical Co. three-fourths of a cent for each pound of magnesium metal produced by Dow's electrolytic process or any other electrolytic process. Until production in this plant and in the Diamond Magnesium Corporation plant near Painesville, Ohio, shall have reached 414,700,000 pounds of magnesium metal, the Defense Plant Corporation will also pay the direct expenses including the wages and salaries of the Dow officers and employees in connection with the construction and operation of the plant.

In addition to increasing its own facilities, the Dow Chemical Co. was asked by the United States Government to license and assist other companies in the production of magnesium by its process, and the Defense Plant Corporation made contracts with Mathieson Alkali, the Diamond Alkali, and the International Minerals and Chemicals Corporation to produce magnesium by this process.

'On October 13, 1941, a contract (exhibit No. 62) was entered into between the Defense Plant Corporation and the Dow Chemical Co. whereby Dow agreed to disclose its electrolytic process and facilities and to give technical advice to the Diamond Alkali Co. for a plant to be operated by Diamond near Painesville, Ohio. As compensation, the Defense Plant Corporation agreed to pay Dow 1 percent of the Defense Corporation's expenditures for the cost of the plant to be erected for the use of Dow's or any other electrolytic process; but this fee is not to exceed $160,000. The Corporation will also pay Dow three-fourths of a cent for each pound of magnesium metal produced in the plant by Dow's or any other electrolytic process until production in this plant and in the plant to be owned by Defense Plant Corporation and operated by Dow near Velasco, Tex., shall have reached 414,700,000 pounds of magnesium metal. Furthermore, Defense Plant Corporation will pay Dow all reasonable traveling expenses and similar out-of-pocket expenses for their work in consulting with the Defense Plant Corporation and/or the Diamond Co.

The Diamond Alkali Co., which manufactures sodium alkalies and related chemical products, will use Ohio dolomite as the raw material for making magnesium.

On December 12, 1941, a similar contract (exhibit No. 63) between Defense Plant Corporation and the Dow Chemical Co. provided for the disclosure by Dow of its electrolytic process to the International Agricultural Corporation (now International Minerals & Chemical Corporation) for a plant to be built by the Defense Plant Corporation but to be operated by the International company.

This plant will be constructed near Austin, Tex. It will be operated by the Union Potash & Chemical Co., a subsidiary of International Minerals & Chemical Corporation. It is to have an annual capacity of 24,000,000 pounds and will be operated in conjunction with a chloride plant at Carlsbad, N. Mex., where the potash deposits of the company are located.

The Mathieson Alkali Works is one of the smaller chemical companies engaged mainly in the production of alkalies, soda ash, and caustic soda. A magnesium plant to be operated by this company will be owned by the Defense Plant Corporation. It will cost approximately $22,500,000 and will have an annual capacity of 36,000,000 pounds of magnesium. It will be located near Lake Charles, La., near Mathieson's alkali plant. The raw material used will be dolomite ore, which will come from the Mathieson deposits at Burnett, Tex. This will be combined with calcium chloride, a waste byproduct from the ammonia-soda alkali process.

The contract between Dow Chemical Co. and the Defense Plant Corporation whereby Dow would agree to transfer the "know how" to Mathieson has not yet been signed.

In addition, Basic Magnesium, Inc., Permanente Metals Corporation, and Union Carbide & Carbon Co. are now undertaking the construction and operation of other magnesium producing units.

GOVERNMENT ACTION—THE CONSENT DECREE

Most of the above facts were derived from an investigation of the magnesium industry begun by the Antitrust Division in July 1940. This investigation culminated in the presentation of three indictments in the Southern District of New York on January 30, 1941 (exhibit No. 64, 65, 66).

Digitized by Google

The indictments charged Alcoa, Dow, I. G. Farben, M. D. C., and A. M. C., with conspiring to fix prices, to restrain trade, and to monopolize the magnesium industry. It was also charged that a monopoly was actually effected.

In March 1941, the defendants undertook negotiations with the Antitrust Division for a consent decree. These negotiations continued until April 15, 1942, when the decree was entered. This decree (exhibit No. 67) provided that—

1. All existing patent licenses among the parties were canceled and the parties were enjoined from taking any action under these patent licenses;

2. Each of the corporate defendants and its affiliates was required to grant to any applicant a royalty-free license under any fabrication or production patent owned by it. In the case of the production licenses, however, a reasonable royalty might be charged after the present emergency.

3. Under Dow's contracts with the Defense Plant Corporation, that part of Dow's compensation therefor which represented royalty on account of its production patents was to be canceled.

4. Magnesium Development Corporation was prohibited from acquiring any other patents or patent rights.

By this means not only was the conspiracy terminated for all time, and the restrictions referred to above removed, but a positive influence was directed toward the expansion of the magnesium industry, since under the terms of the decree rights under the pooled patents were available to all who made application therefor. The long history of negotiations after a full discovery had been made of the restrictions effected under the pooled patents indicates what might be avoided if S. 2303 or a bill with like effect were law. If the President had had the power to seize the M. D. C. patents when their restrictive use was disclosed in January 1941, the magnesium industry might now well be far ahead of its very limited present production rate.

EXHIBIT No. 131

COMMUNICATION PATENTS

Statement by William H. Bauer

My purpose in appearing here is to advise this Committee concerning the legislative recommendations which the Federal Communications Commission has made regarding communication patents.

The Federal Communications Commission was established by Congress in 1934, and it was given regulatory jurisdiction over all nongovernmental communications—wire and radio. The Federal Communications Commission succeeded the Federal Radio Commission in the regulation of radio broadcasting.

On March 15, 1935, the President approved a joint resolution of Congress (Pub. Res. 8, 74th Cong., 79 Stat. 43) authorizing the Federal Communications Commission to investigate and report on the American Telephone & Telegraph Co. and all other companies engaged directly or indirectly in telephone communication in interstate commerce. The resolution was drawn in broad terms authorizing the Commission to investigate and report to Congress regarding various phases of the telephone business, including research and patents.

The Commission completed the telephone investigation under Public Resolution No. 8 during 1937 and a proposed report drafted under the supervision of Commissioner Paul A. Walker was transmitted to Congress February 23, 1938. The final report of the Commission on the telephone investigation was transmitted to Congress on June 14, 1939. This report was printed as House Document No. 340, Seventy-sixth Congress, first session. The report was unanimously adopted by the members of the Commission, who where at that time Frank R. McNinch, Chairman, Norman S. Case, T. A. M. Craven, George Henry Payne, Frederick Thompson, Thad Brown, and Paul A. Walker.

I have made a few copies of this final report available to this committee. The report contains a recommendation as to patent legislation which will be found on page 601, and reads as follows:

"8th. In the event of the refusal of any common-carrier utility engaged in interstate communications to license others upon reasonable terms under any patents obtained in connection with communication service to the general public as a common-carrier utility, the Commission should be empowered, upon the application of parties so refused, to order the issuance of such license; *provided*, That the granting thereof will not be detrimental to the communication service

Digitized by Google

rendered by the utility holding such patents and not detrimental to technical progress."

The proposed report, prepared under the supervision of Commissioner Walker, to which I have previously referred, contained a broader recommendation as to patent legislation. I also have made a few copies of the Walker report available to this committee. The patent recommendations occur on page 712 of the report and read:

"(b) The power to permit the Bell System, or any utility engaged in interstate communications, to obtain (under the determinations of this Commission) the *right to* use patents, owned by others, which may be essential to the rendition of its communications service to the public.

"(c) In the event of the refusal of the Bell System, or any utility engaged in interstate communications, to license others upon reasonable terms under any patents obtained in connection with communications, the Commission should be empowered, upon the application of parties so refused, to order the issuance of such license, providing that the granting thereof will not be detrimental to the communications service rendered by such utility."

Paragraph (c) of the Walker report is quite similar to the patent recommendations of the final report.

Paragraph (b) of the Walker report goes further as to patents in the communications field; it provides for the licensing of any patent, irrespective of ownership, to persons engaged in communication service to the public. This has the specific purpose of preventing the interference of patents with the building up of the best communication facilities available. In contradistinction, the patent recommendation in the Commission's final report and paragraph (c) of the Walker report, go only to the compulsory licensing of patents obtained in connection with public service communications.

The findings which form the basis of the patent recommendations in the Walker report and the patent recommendation in the Commission's final report are the same. Therefore, I will limit my further discussion to the final report of the Commission. Turning to the final report, you will find chapter 8 (pp. 213–246) deals exclusively with the subject of patents. Chapter 7, entitled "Research," also deals with patents, in so far as related to the work of research of the Bell System, and chapter 9 on Engineering and Standardization presents patent information relating to the subject of standardization of telephone equipment.

In brief, chapter 8 of the Commission's final report sets forth the policies adopted by the Bell System for achieving its patent objectives; the development and application of these patent policies and practices; the patent position of the Bell System as of January 1, 1935, and the intercompany patent relationship of the Bell System as of the same date.

In part II of the report, on page 583, will be found the Commission's findings as to Bell System patents. If the committee has no objection, I will read these findings, which are less than two pages, and amplify the same from other parts of the report where I believe such amplification might be helpful to this committee:

"The patent structure of the Bell System has grown from the two original Bell patents to a structure involving the ownership of more than 9,000 patents and rights under an even greater number of patents owned by others. From the beginning, control over Bell System patents has been centralized in the parent company of that system."

I might add at this point that the Bell System was built on patents. Also, in order to clarify what I have just read, I might add that since 1900, the American Telephone & Telegraph Co. has been the parent company of the Bell System. Prior to 1900, the parent company was known as the American Bell Telephone Co.

"Prior to the expiration of the Bell patents, the system had established the policy of acquiring all patents and patent rights related to communications deemed by it essential for the maintenance of its position in the communications field."

Here I might add that this policy of acquiring patents and patent rights was accomplished both through the purchase of patents and patent rights of any particular importance to the telephone field, and the securing to the greatest possible extent patents upon technical developments made by the Bell System. On the other hand, the Bell System granted few licenses under its patents and its licensing policy was such as to obtain maximum rights under the patents of

Digitized by Google

others, and to grant such restricted licenses under its own patents as not to endanger the Bell System in the field of telephony.

"Prior to 1908, the Bell System vigorously prosecuted patent suits against telephone companies engaged in telephone exchange service to the public. Later, these infringement suits were discontinued and the Western Electric Company was permitted to sell telephone-exchange equipment and certain types of toll equipment to the public under such restrictions as the American Company might impose from time to time."

These restrictions were such as to limit the use of the telephone devices sold by the Western Electric Co. to fields that would not endanger the position of the Bell System in the field of telephony (wire and radio).

"The Bell System has at all times maintained a controlling patent position as to equipment and instrumentalities necessary for rendering efficient and economical long-distance telephone service to the public. The system has also maintained patent control of public service in two-way radio telephony. In 1930 this system obtained control of the manufacture and sale of the teletypewriter; and in recent years has maintained control of devices considered necessary for the economical operation of broad-band-carrier systems over coaxial cables. The Bell System has maintained complete patent protection as to the types of automatic exchange equipment standardized for the telephone operating companies. The Bell System also obtained a strong patent position in sound motion pictures and a like patent position in sound amplifiers for public address and theater purposes."

I might point out to the committee that the control of manufacture and sale of the teletypewriter includes patent control. I might also point out that the strong patent position obtained by the Bell System in sound motion pictures was a byproduct of the research in the telephone field carried on by the Bell Telephone Laboratories and the Western Electric Co.

"By virtue of its policies and practices concerning the acquisition of patents and patent rights, the Bell System has continuously held from year to year a large number of unused patents. Patent suppression is commonly understood to mean ownership or control of patents and the intentional nonuse thereof. With the Bell System the nonuse of the patents has resulted in part from acquisition to protect and maintain as near as possible a complete occupation of the telephone field, both as to services to the public and as to manufacture of equipment therefor."

As I have before stated, this report shows that the Bell System in 1934 owned more than 9,000 patents and had rights under even a greater number of patents owned by others. Of the total number of patents owned, less than half were used. A great many of the unused patents covered alternatives of the methods and equipment used by the Bell System. This large number of unused patents was due to the policy of the Bell System to acquire patents and patent rights of any particular importance to the telephone field, even if no use was intended. As an example of this practice, I refer you to footnote 29 on page 192 of the Commission's Final Report, where it is shown that from correspondence taken from the files of the Western Electric Co., it was the adopted practice in connection with certain of the devices used in long-distance telephone, to develop and patent all alternatives for which there was no intended use.

"For the purpose of maintaining the exclusive right of manufacture and sale of patented equipment of Bell telephone operating companies, Bell System patent rights are so divided under intercompany contracts and agreements that the operating companies obtain the right to use patented methods and equipment made available to them, while the manufacturing subsidiary of the Bell System (Western Electric Co.) obtains the exclusive right to manufacture and sell under said patents, thereby compelling the operating companies to purchase their equipment covered by Bell System patents from the Western Electric Co."

In explanation of that just quoted, the intercompany contracts and agreements include the license service agreements between the American Telephone & Telegraph Co. and the so-called Bell telephone operating companies. These license service agreements are dealt with in chapter 6 of the Commission's report.

"Whether patent rights held by the Bell System are acquired by purchase or result from research and development, the expense thereof is borne either directly or indirectly by operating licensee companies. The manufacture and sale of patented equipment to the operating companies of the Bell System, as provided for in the intercompany contracts and agreements respecting Bell System patents, places in the hands of the Western Electric Co. the exclusive right to manufacture and sell all equipment covered by Bell System patents to telephone

Digitized by Google

operating companies that do substantially 90% of the telephone business in the United States. This system of manufacture and sale of equipment may be repugnant to the spirit of the anti-trust laws of the United States. Such a condition also introduces a problem in the complete and proper regulation of the telephone industry, i. e., it eliminates any possibility of the Bell Telephone operating companies securing equipment covered by Bell System patents on a competitive bidding basis and thereby renders impossible the securing of significant comparative prices upon equipment included in the rate base underlying 90% of the telephone business in the United States."

The particular antitrust law referred to in the matter just quoted is section 10 of the Clayton Act, United States Code Annotated, title 15, chaper I. This section has to do with prohibiting the purchase of equipment, except through competitive bidding, by any common carrier engaged in commerce exceeding the amount of $50,000 in any 1 year from another corporation having on its board of directors or as its president or manager any person who at the same time holds a similar office in the corporation of the common carrier concerned.

"The 'cross-licensing agreements' in which the American Co. and the Western Electric Co. constitute the 'telephone group' and the General Electric Co., the Radio Corporation of America, and the Westinghouse Electric and Manufacturing Co. and other companies constitute the 'radio group,' represent the most extensive licensing of others under Bell System patents that has occurred in the history of that system. But these cross-licensing agreements do not represent a free exchange of licenses between the companies concerned, in that the chosen fields of the 'telephone group' and the chosen fields of the radio group are kept intact, i. e., under the agreements the American Co. retains its exclusive rights under Bell System patents in two-way telephone services to the public (wire and radio) while the General Electric Co., the Radio Corporation of America and the other companies of the radio group retain similar privileges in their respective fields.

"The licensing of others under Bell System patents has been of a limited character. The policy of the American Company has been to withhold licenses from others except in those fields that do not threaten the primary interests of the Bell System."

At this time I wish to again point out that these findings definitely show an unremitting policy on the part of the American Telephone & Telegraph Co. and its manufacturing subsidiary, the Western Electric Co., to acquire and maintain through purchase and development all such patent rights as are necessary to maintain a dominant position in the telephone field both as to service and manufacture of equipment, and to maintain a patent-licensing policy which will not interfere with this dominant position. These practices result in many unused patents and also eliminate any possibility of the operating Bell Telephone Co. securing patented equipment through competitive bidding. The form of compulsory licensing recommended by the Commission negatives these practices when public interest is served.

"The ownership and control of patents by the American Company contributes to its ability to control the exploitation of potentially competitive and emerging forms of communication, such as Teletypewriter Exchange Service and two-way public radio telephone service."

This last paragraph of the findings clearly indicates the conflict that might arise between patent control and the Commission's regulation of the communcations industry in bringing about the most efficient communication service. To be more explicit, let us assume that under the present permissive merger legislation now being considered by Congress of the telegraph companies, it is specified that the telegraph companies have the benefit of the teletypewriter exchange services. As shown by the report of the Commission on the investigation of the telephone industry, the control of the teletypewriter patents is in the Bell System. Therefore, the teletypewriter exchange services could not be placed in the hands of the telegraph companies unless a license is obtained under the Bell System teletypewriter patents. Also, should the telegraph companies wish to use the coaxial cable for improving their services, the same situation would pertain. I might add that the coaxial cable would permit over one cable the transmission of, say, 2,000 telegraph messages simultaneously. That would be a great boon if needed in the telegraph field. But that is covered by patents held by the Bell System. There is such a cable between Philadelphia and New York now being used for telephone messages. Again, the same situation would be true in case a person applied to the Commission for furnishing two-way radiotelephone service in the United States.

Digitized by Google

RADIO-BROADCAST PATENTS

The patent recommendations of the Federal Communications Commission are limited to the compulsory licensing of patents for use in the common-carrier field. The patents that are excluded under the Commission's recommendations pertain particularly to radio-broadcasting. The Commission has made no legislative recommendations as to radio-broadcast patents because Congress has never requested the Commission to investigate and report upon such patents. The Commission has, however, pursuant to section 218 of its act, kept itself informed as to radio-broadcast patents and has also kept itself informed in general, regarding the licensing policies of the principal patent holding companies in the radio-broadcast field.

The Radio Corporation of America is the principal holder of radiobroadcast patents, and if there is no objection, I will be glad to give what information the Commission has regarding the licensing policies of this Corporation in the radio-broadcast field. I will also point out the manner in which private control of radio-broadcast patents, at times, may interfere with the Commission's duties in bringing about a larger and more effective use of radio in the public interest.

Before proceeding with the present policies of the Radio Corporation of America regarding its radio-broadcast patents, it is best that I review briefly the history of such patents and the Radio Corporation of America's part therein.

At the beginning of the first World War, the Government called upon manufacturers for considerable radio equipment. At that time there was on the statute books the act of June 25, 1910 (36 Stat. 851), giving the right to any person whose patented invention was used or manufactured by the United States to sue in the Court of Claims for the recovery of reasonable compensation for such use or manufacture. When the Government desired large quantities of radio material in 1917 that would infringe patents held by different parties and radio companies, contractors balked at the idea of accepting such contracts because the patent statute I just mentioned did not make the Government liable in the case where the infringing devices were manufactured for the Government. On July 1, 1918, the act of June 25, 1910, was amended (40 Stat. 705), so as to make the Government additionally liable as to infringing devices manufactured for it.

The Government's extensive use of radio in the first World War gave radio broadcasting a great impetus. At the termination of the war a number of companies were interested in radio and each held patents. These companies included the Marconi Wireless Telegraph Co. of America, General Electric Co., Westinghouse Electric & Manufacturing Co., the Western Electric Co., and the American Telephone & Telegraph Co. The manufacture of radio equipment, particularly tubes, by any one company was more or less blocked because of infringement of patent rights held by other companies.

In order to relieve this situation, in 1920 the so-called cross-licensing patent agreements were entered into between the "radio group" and the "telephone group." The telephone group comprised the Western Electric Co. and the American Telephone & Telegraph Co., and the radio group comprised the Radio Corporation of America, General Electric Co., the Westinghouse Co., and other companies that held radio patents.

The Radio Corporation of America was incorporated on October 17, 1919. It was formed by the General Electric Co. for the specific purpose of taking over the patent business of the Marconi Wireless Telegraph Co. of America, a British-controlled concern.

In 1921, additional cross-licensing agreements were made between the telephone and radio companies. As a result of the 1920 and 1921 agreements, the General Electric and the Westinghouse companies obtained the exclusive right to manufacture radio receiving sets; R. C. A. obtained the exclusive right to sell radio receiving sets which were to be purchased from the General Electric Co. and the Westinghouse Co.; and the American Telephone & Telegraph Co. and the Western Electric Co. were granted the exclusive right to make, lease, and sell broadcasting transmitters.

In 1926 the cross-licensing agreements were modified whereby the telephone group granted the radio group the nonexclusive right to manufacture, lease, and sell broadcast transmitting equipment and thus relinquished its claim to the exclusive right with respect to such equipment. These 1926 agreements retained in the radio group the exclusive right of manufacture and sale of radio-broadcast receivers in the United States.

Digitized by Google

These so-called cross-licensing patent agreements are covered in chapter 8 of the Commission's final report on the telephone investigation.

On May 13, 1930, the United States Government filed a petition in the District Court for the District of Delaware against the American Telephone & Telegraph Co., the Western Electric Co. (telephone group), General Electric Co., Westinghouse Co., General Motors Corporation, and others. The petition alleged that the defendants were guilty of unlawful combines and conspiracy in restraint of interstate commerce in the manufacture, use, and sale of radio apparatus, and that the defendants were parties to certain contracts in restraint of such commerce in violation of section 1 of the Sherman Antitrust Act.

After the Government suit was filed, negotiations were carried on between the contracting parties and representatives of the Department of Justice looking toward the removal of the exclusive provisions of the contracts. Following these negotiations, a new contract was executed on July 1, 1932, which removed the exclusive provisions of the July 1, 1926, agreements. These new agreements were submitted in court, and by a stipulation of November 21, 1932, it was agreed that the suit be dismissed as to the American Telephone & Telegraph Co., and the Western Electric Co. (telephone group), and that the Department of Justice found no objection to the new cross-licensing agreements. On the same day, a consent decree was entered against the remaining parties to the suit enjoining them from enforcing the exclusive provisions ofthe cross-licensing agreements.

As I have before noted from the patent findings of the Commission regarding its investigation of the telephone industry, the cross-licensing agreements of 1932 do not represent a free exchange of licenses between the companies concerned in that the chosen fields of the telephone group and the chosen fields of the radio group are still reserved to the respective groups; that is, under the agreements, the telephone group retains exclusive rights under its patents in two-way telephone service to the public (wire and radio), while the Radio Corporation of America, General Electric, and other companies of the radio group, retain similar privileges in their respective fields.

Recent changes in the cross-licensing agreements have not in any way affected the rights ofthe respective radio and telephone groups.

Regarding broadcast receivers, the Radio Corporation of America has under these cross-licensing agreements a nonexclusive right to manufacture and sell and also the right to sublicense others. It is the only company of the two groups that has the right to sublicense others under the broadcast receiver patents of all the contracting companies. In addition, the Radio Corporation of America has the right to sublicense others under receiver patents held by others in the United States and the same right under United States patents obtained by a number of foreign concerns. It also has many patents which have resulted from its own developments. Therefore, it will be seen that the Radio Corporation of America has a very strong patent position in the radio-broadcast receiver field.

Under the cross-licensing agreements between the radio group and the telephone group, the Radio Corporation of America has the nonexclusive right to manufacture and sell broadcst transmitters under the patents of all the contracting companies and the right to sublicense others under its own patents, as well as the patents of General Electric and Westinghouse.

The Radio Corporation of America has licensed 52 or more companies for the manufacture and sale of broadcast receivers. It has licensed a number of companies for the manufacture and sale of transmitters under the patent rights I have previously defined. However, all the transmitter licenses limit the manufacture to transmitters for specific purposes. Also, in these license agreements for both receivers and transmitters, the Radio Corporation of America usually obtains a license under the patents of the licensee both as to transmitters and receivers and, in some cases, these agreements permit the Radio Corporation of America to sublicense others.

It is clear from what I have said that the Radio Corporation of America has a dominant patent position in the radio broadcast receiver field. It also has a very strong patent position in the transmitter field. There are, however, a few others that hold important patents in the broadcast-transmitter field under which the Radio Corporation of America does not have the right to sublicense others, such as the American Telephone & Telegraph Co., Maj. Edwin H. Armstrong, and Allen B. DuMont Laboratories, Inc.

The Commission's regulatory interest is principally in transmitters. Because of this conflict of patent rights in the transmitter field the Commission's efforts

Digitized by Google

to establish new broadcast services to the public are sometimes hampered. This was definitely illustrated in the case of high-frequency broadcast stations, commonly known as FM broadcast stations. It was also illustrated in connection with the Commission's consideration of transmission standards for television broadcast stations. If the legislation proposed by the Commission for common-carrier patents were extended to radio broadcast patents, this patent interference would be eliminated.

FOREIGN-PATENT AGREEMENTS

Chapter 8 on patents, of the Commission's final report on the telephone investigation (pp. 242–245) deals with foreign-patent agreements of the Bell System. The report indicates generally the terms of these agreements and the territories covered.

It can be said that these patent agreements are of two types, those dealing with patents relating to telephony and telegraphy, including cables, and those dealing with byproduct patents of the Bell System, such as sound motion picture inventions, etc.

Beginning in 1926 the foreign contracts of the Bell System were negotiated by the Electrical Research Products, Inc., a wholly owned subsidiary of the Western Electric Co.

In order that the committee might have an understanding of the type of foreign-patent agreements entered into by the Bell System, I have here produced an agreement relating to telegraph and telephone devices and another agreement relating to motion-picture sound films, which I have previously termed "byproduct patents."

The agreement as to telegraphy and telephony is that between the Electrical Research Products, Inc., and the Sumitomo Electric Wire & Cable Works, Ltd., of Osaka, Japan. The agreement is dated July 1, 1931, and terminated January 1, 1941. The agreement extended to the Japanese company a nonexclusive license for the manufacture of cables for telegraph, telephone, and other purposes, to be manufactured in Japan but not elsewhere, and to be sold throughout the world. There are a number of limitations and territorial exceptions to this general provision. The Japanese company, on the other hand, grants the Bell Co. (Electrical Research Products, Inc.) exclusive rights under its patents in the United States and Canada to manufacture and sell and use, and nonexclusive elsewhere. The territorial rights of the Japanese company are limited by 13 previous agreements with companies in other foreign countries set forth in schedule A of the agreement. The license provides for exchange of technical information.

Regarding foreign agreements respecting byproduct patents of the Bell system, I have here an agreement between Electrical Research Products, Inc., the RCA Photophone, and 10 United States producers and distributors of motion-picture sound film as the American parties, and 2 German manufacturing companies and 2 German distributing companies as the German group. This agreement was negotiated in 1930. The agreement covers all sound-film patents of both groups.

The territory covered is the entire world. In the contract the American companies were given exclusive rights in the United States, its Territories and possessions, Canada and Newfoundland, Australia, New Zealand, Straits Settlements, India, and Russia, while the German companies were given exclusive rights in Germany, including the Free City of Danzig, Saar Basin and the Territory of Memel, Austria, Hungary, Switzerland, and a number of other European countries. A nonexclusive license was extended to each group as to a number of South American countries and the countries not covered by the exclusive provisions.

The agreement also includes certain provisions as to recording and distributing which tended to eliminate competition in the countries where each group possessed a nonexclusive license.

On May 24, 1934, the American companies relinquished to the German companies their exclusive rights under the patents obtained by the German companies in the United States and also waived the provisions tending to restrict competition. This action on the part of the American companies was a result of the Department of Justice suit against the telephone group and the radio group regarding cross-licensing patents, with which I have previously dealt.

FOREIGN AGREEMENTS—RCA

The RCA Photophone, Inc., was a subsidiary of the Radio Corporation of America at the time it joined the Electrical Research Products, Inc., in negotiating the Paris agreement with the German companies regarding sound motion

Digitized by Google

picture patents. In addition to this agreement with the Germany companies the Radio Corporation of America has patent agreements with companies located in Australia, England, France, Germany, Holland, Hungary, Italy, Japan, and Russia.

The Commission does not have in its files complete copies of any of these foreign agreements. At the time the Commission made the telephone investigation the Radio Corporation of America was asked to provide information regarding its agreements with companies in foreign countries. The information furnished, however, is not sufficient to give this committee full information as to the terms of the agreements and the territories covered. I might also state that it is highly likely that a number of other radio companies in the United States have foreign agreements and that an investigation of the Radio Corporation of America agreements would not be in itself a complete picture as to radio patents.

EXHIBIT No. 132

GERMAN CARTELS

Statement by Heinrich Kronstein

I appear here in obedience to a subpena served upon me and upon my superior, Mr. Thurman Arnold, Assistant Attorney General. My subject is the development of cartels in Germany and their relation to patents.

For several years I practiced cartel law in Mannheim, Germany, representing numerous cartels in private negotiations as well as litigation in the courts. Since 1935 I have been in the United States. In addition to my work on cartels for the Alien Property Custodian and the Department of Justice, I also teach at Georgetown University.

My statement will be addressed primarily to the following questions:

1. Why did Germany become the homeland of the cartels and the principal exporter of technology?
2. What has been accomplished by and with the cartels in the different stages of the development?
3. What was the significance of patents in the development of the cartel device?
4. What was the effect of these cartels on state and society in the several stages of the development?
5. How did the German Government react to the development of cartels and the use of the patent device in the several stages of development?
6. What was the reaction of other countries to the German cartel and patent system?
7. How did Hitler utilize the cartel and patent system for the purpose of preparing for and waging the war?
8. How did he use especially the obligations assumed by firms outside of Germany, to German firms, for his purpose?

I am not going to answer all these questions, but I hope to contribute something to the understanding of the phenomenon under discussion. The statement as submitted herewith will not be read in full, but it may be useful as a reference in answering questions which may come up today.

I wish to express my deep desire to submit the material to you as impartially as possible and to leave it up to you to draw conclusions therefrom.

I. DEVELOPMENT BEFORE HITLER

Cartels and other forms of monopoly power may be considered from the point of view of their legal aspects, their internal organization, their relations to actual or prospective contractees, and to governmental authorities, or from the point of view of their economic aspects, effect on prices, wages, and salaries, production and distribution of markets.[1]

---

[1] Rudolf Callmann, with whom I had the pleasure of discussing the problem of German cartels at great length, defined a cartel as "a contractual association of legally independent entrepreneurs in the same or a similar field of business, formed with the intent, effect, or potentiality of influencing the market by means of regulation of competition" (Investigation of Concentration of Economic Power, hearings before the Temporary National Economic Committee, pt. 25, p. 13347) following thereby statements of the cartel cour.
This definition tries to be legal and economic at the same time. Is it helpful?

Digitized by Google

All these aspects have been analyzed again and again.[2] These analyses have one thing in common: They deal with a general type of "cartel and monopoly power." Their aim is to justify a judgment taken to be correct with regard to the entire subject matter.

This article only deals with the dynamics of the German cartels and other forms of monopoly power in a certain period, especially in the light of their repercussions on the outside world. Such a study is only worthwhile if free from the dogmatic method so often used in discussions of this problem with people believing in free trade as the only form of sound commerce, or with people convinced of the justification of a hostile attitude against capitalist leaders. None of these groups even try to understand the facts. The less prejudiced our study, the more forceful can its conclusion be.

Cartels are tools used to accomplish certain aims. They have no lives of their own. The people behind them give them life. The psychology of these people, their efficiency or laziness, their defensive or offensive spirit, together make up the spirit of the cartels. It is really amazing how the use of legal entities makes people believe that the legal entity has certain characteristics, while actually it can show just the opposite characteristics whenever used for different purposes even by the same people. In Germany, since 1879, cartels have been used for three purposes: (1) To satisfy the profit hunger of private business organizations; (2) to do this, but at the same time to win influence over the political and economic organization of the Nation on behalf of private interests; (3) to serve as a means of governmental, political power.

There is no legal or economic form of a cartel which would be wholly unfit to serve any of these three aims. A cartel regulating prices or conditions of delivery may be a powerful means of influencing, or even making ineffective, the tariff policy of a government. On the other hand, a complicated cartel with a joint sales agency, patent exchange and the like, may prove to be merely a means of obtaining additional profits. Therefore, a student of the dynamics of the German cartel system would not accomplish much by describing the several forms of a cartel.[3] He would find that the economic history of all countries in all times knows of many agreements between business organizations concerning prices, working conditions, and the distribution of markets. For the entire economic machinery such agreements become significant only as soon as they determine, in connection with other factors, in any way the economic and political structure of a country.

The specific intent of the people involved is of no significance. An agreement between two local banks to exchange a list of debtors, or to make identical conditions on loans, in itself has no monopolistic end. The banks want to prevent losses in case of insolvency of a mutual customer and to have the benefit of the best protection lawyers can furnish. As soon, however, as in the regular course of business no bank is open to this customer, from his point of view and therefore from the public point of view, the agreement between the two local banks becomes a monopolistic agreement. The public has an interest in a merchant who may tomorrow be at the mercy of the bureaucracy of a single bank organization.[4] This instance shows how a cartel agreement of the most simple form may develop into a cartel agreement influencing the public welfare. The general trend and the aims of the cartel are the only things which count.

The German cartel system developed under very specific conditions to accomplish very specific ends. Germany was the last western power to enter the industrial field. Until the legislation of the Zollverein made possible a sufficiently high tariff to permit the establishment of production plants, it was almost exclusively the customer for products manufactured by other nations. Friedrich List, who studied economy in the United States as well as Germany,

---

[2] The best bibliography of cartel literature is Arnold Wolfers, Kartell Problem Im Lichte Der Deutschen Kartelliteratur.

[3] Milton Handler, A Study of the Construction and Enforcement of the Federal Antitrust Laws, Monograph 58, Temporary National Economic Committee, p. 922.

[4] It is typical that the representative of the German banks at the cartel hearing in 1930 (p. 216) made the point that the government can have no interest in any cartel of banks providing uniform conditions of credit "since they do not contain any legal binding of the outsiders and have no intention of governing the market."

Digitized by Google

came to the conclusion that in both countries any industrial development was impossible so long as domestic industry was not given a chance to develop under what he called "an educational tariff." The basic statement of his conclusions is:

"History teaches us how nations by nature gifted with all means necessary to conquer wealth and power may repeatedly change their economic system to meet the demands of each stage of their development. They can overcome the state of barbarism by free trade with more progressive nations. After some time they may, by trade limitations, develop plants, fisheries, shipping, and foreign trade, and finally, in the highest stage, they may slowly return to the principles of free trade to protect their farmers, manufacturers, and merchants against laziness, and to induce them to maintain the acquired superiority." [5]

Although German trade and industry began to develop under the protection of the Zollverein, the real significance of the teaching of Friedrich List did not obtain much influence until much later. Most "economists" were opposed to Bismarck's tariff bill in 1879. They called such legislation a gift to the farmers and a deadly blow to the slowly developing German industry. They were in the good company of the chargé d'affaires in Berlin, who wrote to the State Department shortly before the enactment of the Bismarck tariff statute on February 15, 1879:

"The law levying restrictive duties on imported products meets with great opposition, and its injurious effect in a country which, like Germany, is able to produce so little of its own food and is dependent on others for the raw materials of its manufacturers, would seem to be self-evident. It is, in reality, a display without resisting the competition of cheap producers and manufacturers of the United States and Great Britain, and making up in a false way for the great loss of capital and labor in Germany resulting from the heavy drain on the muscular and mental resources of the nation caused by a huge standing army, and the doubt and loss occasioned in business by consistent continental wars and rumors of war. As the reports of our countries here show, much of the working capital of Germany is idle, and several branches of industry which supported whole districts * * * such as hop culture and the lead pencil, wood, and toy manufacture are becoming steadily of less importance and leaving the country altogether." [6]

On August 15, 1879, we find furthermore in one of the first reports of the new Ambassador, Mr. White, to the Secretary of State the following statement:

"There are some who see in the new protective tariff nothing but a necessary step to a reorganization of German industry. The idea appears to be that this industry shall exist for Germany alone; that the Government should protect it from foreign competitors, while it clothes itself in some new form of guilds with the object, of course, of improving the conditions of both operatives and employers. This policy of isolation as regards Prussia has increased since the military success of 1870 and, is further strengthened by the necessity the German Government causes itself in maintaining a huge standing army."

Mr. White realized the significance of the new "guilds," but he misunderstood their policy in viewing it as a policy of isolationism, when it was just the opposite.[7]

The export figures of Germany increased as never before. After this date, in almost every field German industry developed into the most powerful industry in Europe, whereas in 1876 the German commissioner on the Philadelphia World Exposition called the German goods "an exhibition of cheap and bad products." [8] England was suddenly confronted with a competitor, not only in the European countries outside of Germany, but in all parts of the world. Instead of many

[5] Friedrich List, Das Nationale System (p. 179).

[6] Papers relating to the foreign relations of the United States transmitted to Congress with the annual message of the President December 1, 1879.

[7] The only men who realized what the future would bring was the leader of the free-trade group, Ludwig Bamberger, who on May 3, 1879 (record of the Deutsche Reichstag, fourth period, 2d sess.) stated: "The consequences of high tariffs will be the resurrection of conditions sometimes called 'the union of industrialists'—the German sheet metal manufacturers—there are only six—are so sure of themselves that they already are building its union."

[8] Statement of the German commissioner in the Exhibition Rouleaux, quoted in Isay Die Auslegung 11.

Digitized by Google

figures, it seems to be sufficient to mention one instance. The export of hard coal out of Germany developed as follows between 1886 and 1905:

Year	Export	Year	Export
	Tons		*Tons*
1886	8, 655, 240	1896	11, 598, 757
1887	8, 781, 377	1897	12, 389, 907
1888	9, 460, 258	1898	13, 989, 223
1889	8, 847, 202	1899	13, 943, 174
1890	9, 145, 187	1900	15, 275, 805
1891	9, 536, 374	1901	15, 266, 267
1892	9, 649, 055	1902	16, 101, 141
1893	9, 677, 305	1903	17, 389, 934
1894	9, 737, 075	1904	17, 996, 726
1895	10, 360, 838	1905	18, 156, 998

This development, which was actually opposed to all theories of classical economists, was only possible because of the cartel device used in combination with high tariff legislation.[9] For instance, the mines entrusted the sale of all their coal to the Rheinisches Westfaelisches Kohlensyndikat,[10] a corporation whose shares were owned exclusively by the cartel members.[11] No sales to anyone else were permitted. The syndicate became the only buyer of the mined products and the only seller to the public. It paid to the member firms the same price, no matter to whom the product was sold. Coal which sold domestically in Bavaria for 17 reichsmarks was sold abroad in Austria for 8 reichsmarks. This was a typical case of the dumping practices followed by cartels. Four hundred and fifty cartels of similar structure existed in 1901.[12]

The most important instances of similar cartels can be found in the coal, iron, electrical, chemical, textile, rubber, timber, paper, glass, and building industries. The ways and means to regulate the export business and to distribute the profits in the domestic field and the losses in the foreign field was accomplished in different ways; e. g., the Oberschlesische Roheisensyndikat in Zabrzo (1901) provided in section 6 for the establishment of a joint sales agency, which however, should not sell in its own name but is agent of each of the member firms. At the end of 6 months prices were to be equalized with the result "that each member firm received the same proceeds for the iron delivered" (sec. 12).

The Stahlwerksverband A. G. Dusseldorf compelled all owners of steel mills to sell all their products to it. The price obtained by the Verband on selling the product was the basis of accounting with each member. The contract (1901) contains the provision (sec. 33): "An exporting plant shall have no better but also no worse position than it would have if all member firms had sold in the domestic and foreign markets what would be their theoretical quotas."[13]

In 1880 the Badische Analine und Soda Fabriken, Ludwigshafen, opened its research laboratory for the study of the industry manufacturing indigo dyestuffs. "Seventeen years of uninterrupted work was not too long to accomplish this end. In 1897 the first success was accomplished" (Carl Duisberg, Verwaltungsberricht des Deutschen Museums, 1910–11, pp. 40–41). "In 1888 the Elberfelden Farbenfabriken (Bayer) began the production of pharmaceuticals" (Carl Duisberg, Lebenserinnerungen, p. 66).[14] Dyestuffs and pharmaceuticals proved to be the basis of the development of the chemical industry. In 1902 the development of the dyestuff and pharmaceutical fields is shown by the attached table.

In 1882 the Continental Edison Co. of Paris granted Emil Rathenau a license to use its basic bulb patents, which became the basis of the establishment of the A. E. G.[15]

[9] Herbert von Beckerath, Der Moderne Industrialismus, Jena 1935, p. 367.

[10] The exceptions to this rule were in themselves quite important, but they should not be discussed here because they were not changing the general aspect (Compare Flechtheim, The Legal Structure of Cartels, 1910).

[11] Contracts of February 9, 1893, amended in 1903.

[12] Statement of representative of the Reich Government in the Commission of the Reichstag discussing new tariff legislation in 1902, quoted in the Report on Cartels, pt. 1, p. 2.

[13] Report on Cartels, pt. 1, p. 273.

[14] Carl Duisberg was one of the founders of the German chemical industry. He is to be considered as the most representative speaker for such industry, wherefore I consulted his statements especially.

[15] Meinhardt, Der Aufhau der Gluehlampenindustrie, 1932, p. 12.

Digitized by Google

In 1905 the British Marconi Co. assigned the rights under the Marconi patents to Telefunken.[16]

Foreign inventions have been brought to Germany, improved, and used to a certain extent, as the basis of German exports. The opportunity given to German chemists to organize research made it possible to overcome the lack of raw material in Germany, at least to a certain extent, and for a limited period of time these research laboratories in Germany, made possible by high tariffs and the cartel system, became the most precious raw material Germany had.

In 1904 Carl Duisberg made the following statement to American chemists, which seems to be important enough to be quoted literally:

"If I have sung the praises of the American engineer and of the American mechanical industry in the preceding portion of this lecture, I must now express my satisfaction with the German chemist and the German chemical industry. In this field lies the strength of Germany, a consequence perhaps of the peculiarity of the German character. Forced by want of natural resources and unprovided with American abundance, the German in scientific exploration must proceed in a cautious and economical manner, always bent on patient and minute research. He is forced to live a simpler life and to be modest in his demands, which is contrary to the American temperament.

"It is true you have already a very important industry in the inorganic field of our science and produce large quantities of acids and alkalies and, above all, of metals. In consequence of the immense and cheap water power at your disposal, a very remarkable electro-chemical industry has been developed. But these works manufacture at present only inorganic products, and so far as I can see it is impossible up to date to manufacture organic products as economically by electrochemistry as it is possible with older chemical methods. You have also begun to isolate the products of tar distillation which are formed during the coking of coal, and it is intended to convert the hydrocarbons thus obtained into more intricate organic products. You have also the beginning of a coal tar color industry, due to the protective duty of thirty per cent ad valorem. I have also noted that in metallurgical and textile works, but above all in factories of heavy chemicals and pharmaceutical specialties, chemists exercise analytic control of the raw materials which enter into the process. At some places we found wonderful laboratories in which many chemists were employed. We saw above all how your universities and technical schools are endeavoring to promote our science. Excellent representatives of scientific chemistry are employed as teachers. Scientific research is carried on more and more.

"But, not withstanding all that, I think that we Germans need not be alarmed in the near future. The time for the development of the organic chemical industries on a large scale has not yet arrived. As I have shown before, the Germans are masters in manufacture where numberless products are employed in a series of reactions which finally lead to the finished product, and require manual labor, which cannot possibly be replaced by machinery, while Americans may claim to be masters where manufacture on a large scale is concerned, which can be done by machinery. Yet we must not leave out of consideration the very important facts that in America wages are extraordinarily high, that the conditions of life are here much more elaborate, and last but not least, that the employees, and more particularly the workmen, manifest a spirit of independence which has become especially noticeable during the last few years. By their labor unions the workmen attempt not only to raise wages to a height which will make manufacturing difficult and less profitable, but they are also endeavoring to take the control of the works out of the hands of the educated managers and put it into the hands of irresponsible labor leaders. This movement, as I have above shown, is especially fatal for the chemical industry in which our glorious science should be supreme.

"But nobody can deny that times will change in all these respects. Then you will be obliged to husband more economically your natural treasures, and you will experiences changes which with us, in the course of historical development, are already things of the past. But this accomplished, the organic chemical industry of this country will commence to flourish. It will be found that the only way that leads to success in chemical manufacture is a combination of science and technics, the two branches of which eminent representatives are to-

[16] Compare, Twenty-five Years of Telefunken, published in 1928.

Digitized by Google

day assembled here, men who in their spheres have done so much already for the advancement of industries. It will be found that technical progress in this industry can only be secured on the basis of purely scientific research, and to the man who first recognized this fact and taught it to the world, to our great fellow countryman, Justus von Liebig, not only the German, but also the great American nation, nay the whole world, owes eternal gratitude." [17]

The immediate price to be paid by Germany for this staggering development seemed not too high from the point of view of the prevailing Prussian philosophy. The freedom of action of the individual disappeared more and more. Free competition, where it existed, became a fight for quotas in the future cartel, while the liberal economists in the universities closed their eyes and pretended to live in a period of free trade. Each device for the protection of the individual became unconsciously a device for control by cartel and monopoly power. The fact that freedom of action disappeared in the sphere of life in which it was supposed to be most predominant had its effect on the entire philosophy of every man, whatever his place might be in the Nation.

[17] Popular Science Monthly, April 1904.

Digitized by Google

Deutsche Fabriken

1902	Aktien-kapital	Obligationen	Reserve-fonds	Hypotheken	Gesamt-betriebs-kapital	Bestande an Waren und Materialien	Dividende 1898	1899	1900	1901	1902	Durchschnitt d. letzt. 5 Jahre
I. TEERFARBSTOFFE												
	M	*M*	*M*	*M*	*M*	*M*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*M*
(*a*) Aktiengesellschaften:												
Farbenfabriken vorm. Friedr. Bayer & Co. Elberfeld	14,000,000	7,644,000	6,415,884	.....	28,059,884	12,919,070	18	18	18	20	22	19.32
Badische Anilin- und Sodafabrik, Ludwigshafen a. Rh	21,000,000	10,000,000	20,811,687	.....	35,752,875	15,360,000	24	24	20	20	20	22.31
Farbwerke vorm. Meister, Lucius & Bruning, Hochst a.M	17,000,000	10,000,000	8,752,875	.....	51,811,687	23,039,000	26	26	24	24	26	24.42
Aktiengesellschaft für Anilinfabrikation, Berlin	9,000,000	4,721,600	3,711,905	500,000	17,933,505	6,740,543	15	15	15	15	16	15.25
Farbwerk Muhlheim vorm. A. Leonhardt & Co., Muhlheim a.M	1,700,000	1,500,000 (Darlehen)	19,202	300,000	3,519,202	1,796,536	3	5	0	0	10	2.43
Chemische Fabriken vorm. Weilerter Meer, Uerdingen a. Rh	4,000,000	2,981,000	500,000	.....	7,481,000	2,060,155	14	14	9	9	4	10.4
Total	66,700,000	36,846,600	40,211,353	800,000	144,558,153	61,906,304	16.67	17	14.33	14.67	16.33	15.4
(*b*) Privatfirmen:												
Leopold Cassela & Co., Frankfurt a.M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
K. Oehler, Offenbach a.M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kalle & Co., Biebrich a.Rh	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dahl & Co., Barmen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Einige kleine Fabriken	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II. PHARMAZEUTISCHE PRODUKTE												
(*a*) Aktiengesellschaften:												
Chemische Fabrik von Heyden, Radeboul b. Dresden	5,000,000	4,000,000	800,000	270,250	10,070,250	1,775,800	gegr am 15.5 1899	15	15	5	6	10.25
Chemische Fabrik auf Aktien (vorm. E. Schering), Berlin	3,000,000	2,000,000	1,765,730	.....	6,765,730	2,207,600	8.5	12	15	10	10	11.1
Total	8,000,000	6,000,000	2,565,730	270,250	16,835,980	3,983,400	8.5	13.5	15	7.5	8	.....
(*b*) Privatfirmen:												
E. Merck, Darmstadt	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
C. F. Bohringer & Sohne, Waldhof b. Mannheim	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vereinigte Chininfabriken Zimmer & Co., Frankfurt a.M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Knoll & Co., Ludwigshafen a. Rh	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
J. D. Riedel, Berlin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Digitized by Google

The patent statute of July 1, 1877, R. G. B. L., page 501 and following, granted a 17-year monopoly to the individual applicant for the patent in consideration of his making his invention public, and as a reward for his individual efforts in the interest of science. But Werner von Siemens, before the enactment of the first patent statute, praised the protection of the individuality of the inventor and the benefit society will have from such protection. No German patent statute up to 1936 [18] mentioned the inventor at all.

In 1900 Carl Duisberg [19] praised the right of the competitors to file objections as the basis of an efficient patent law and its application in the interest of the public welfare. He blamed the machine tool industry for not filing objections against patent applications often enough.

"Such protest alone gives the Patent Office a chance of a reasonable examination. The idea cannot be patented, even if it is worth a million. Only if the idea becomes an actual invention can a patent be asked for. If you are too lenient you do not help the inventor but you do harm the industry."

In 1901 Duisberg made the following statement:

"In Frankfurt you came to the rather strange conclusion that the fact that only 30% of the patents applied for were granted reveals wrong practices on the part of the German Patent Office. We chemists were in opposition to this resolution but the Patent Office met the request of the mechanical industry to a very large extent. The percentage of granted patents, which amounted to 36% in 1889, rose to 50% in 1899 and to 61% in 1900. I believe if they should go on the year 1901 will bring us 70 or 80% or even 100%, of granted patents. It is just horrible. Such a large number of doubtful and bad patents had been granted that many suits in our courts will follow. Furthermore, the Patent Office induced by the rather dark language of the amendment of the patent law and by the decisions of the Reichsgericht, adopted the practice of no longer setting forth the connections between the patent and another patent—I heard them even in the mechanical industry saying—'Dear Patent Office—Stop your gifts. Put on the brakes. You grant too many patents which should not be granted and which only do harm to the industry and do not help anyone.'" [20]

In 1902 Duisberg has this to say:

"You citizens in practical life will understand that you cannot define an invention by just counting your fingers. Processes for the common good of many chemists by which you get somewhat more exploitation of material or by which you can produce somewhat more pure products, shall not be closed to the industry by granting patents. Some of these processes are not more than a change of temperature or distillation of the product in vacuum, or of similar kind. That is done now continually—the statistics of the Patent Office show that the number of objections against patents increased very much, especially in the groups of the chemical industry." [21]

The same Mr. Carl Duisberg some years later, in 1908, said:

"In Class 12 [one of the two classes in the classification of chemical patents] 1860 patent applications have been filed and only 11 were contested. In Class 22 [another class of chemical patents] 1149 patent applications have been filed and only 5 have been contested. The reason is not that the chemical industry did not like to begin patent litigation but the chemical industry is tired. It does not like any more to be continually misunderstood. It does not like to wait for years until it can have a decision of the Supreme Court." [22]

Did Mr. Duisberg really believe what he said here, that the lack of understanding by the Patent Office, especially on the part of lawyers who were very much disliked by Mr. Duisberg, was the reason for the decrease of patent litigation? Did he forget the following: He himself began the exclusion of patent

[18] Statute of May 5, 1936, R. G. B. L. II, p. 1174 ff. The new patent statute provides (par. 36): "That the name of the inventor shall be mentioned in the application, in the publication, and in the patent certificate itself." This protection of the "honor of the inventor" did not change the principal use made of patents to serve as a means of monopoly. It is quite typical of the propaganda of the National Socialist Party to appeal to the individualistic rights of the inventor to give him a so-called honor—and at the same time not only to sustain monopoly powers of the entrepreneurs but to strengthen it to the extreme. The same thing happened in regard to the so-called destruction of the "Anonyme" business economy by corporations, promised by the Nazis, announced in a number of statutes—with the effect that today corporations and monopoly powers are stronger than ever before.

[19] Congress for Industrial Property in Frankfurt a. M., May 14–16, 1900, record, p. 14.

[20] Congress for Industrial Property in Koln, May 14–15, 1901, record, p. 33 ff.

[21] Annual Meeting of Association of German Chemists, Dusseldorf, 1902, Zeitschrift fuer Angewandte Chemie, 1908, p. 980 ff.

[22] Congress for Industrial Property, Leipzig, June 15–20, 1908, record, p. 75 ff.

Digitized by Google

litigation between the dyestuff manufacturers by making a "peace treaty" in the entire field of dyestuffs with A. G. F. A. in 1889,[23] and with other dyestuff firms in 1904. There was no room any more for any kind of patent litigation in the dyestuff field.

Exactly the same development can be seen in the pharmaceutical industry, again under Mr. Duisberg's strong influence. In his very remarkable memorandum concerning the merger of the German dyestuff firms, submitted to all members of the boards of these concerns in 1904, he already mentioned the existence of certain agreements, and complained bitterly about attacks against the possibility of protecting by patents the manufacture of pharmaceutical products. "Who knows how long it will go until the legislators in Germany, Austria, England, and America will adopt the opinions already existing in the Latin countries to deny patent protection to pharmaceutical products and to processes for the manufacture of such products. The same opinion can be found in the trademark field. Influential groups try to abolish the possibilities of protecting trademarks for pharmaceutical products." Mr. Duisberg was very well aware of the tremendous power which this absolute security of big industry as patent owners amounted to, not only in the domestic market, where competition was absolutely excluded, but also in the foreign market, and not only for the period of the patent's existence, but afterward. In his memorandum of 1904 he stated proudly that no one could any more dare to offer any competition against the combined power of the combined firms. On July 24, 1906, in a speech in London, he stated:

"But you will see when the problems have been solved and when the patents have run out and the manufacture is free to every one, why shouldn't the English and foreign firms decide to cope with the German firms and compete with them again? In my opinion this would be futile and would be of no avail. Even in Germany where, as we have seen, the conditions are the most favorable, it would now be scarcely possible, or at least be a singular coincidence if the manufacturer, although possessed of energy and capital, should succeed in building up a new firm in the color line so as to successfully compete against the existing powerful works, and this applies even more to other countries."[24]

The same development with regard to patent litigation, which is in the opinion of Mr. Duisberg the basis of patent protection in the interest of the common welfare, can be seen in the electrical industry.[25] In its tremendous struggle as the owner of most European patent rights for use of Wolfram wire, the A. E. G. was supported by Siemens & Halske and General Electric. In the beginning more than thirty objectors against the patents appeared. It was one of the biggest patent fights since the patent statute was enacted. The fight went through the instances of the Patent Office and of the regular courts until the patent was finally granted. In the end an agreement was reached between all firms manufacturing bulbs to protect each other's patents, to exchange information and patents and to stop the fight.

Another case may show us the fate of an inventor who refused to join any kind of combination. I ask for the pardon of the reader if I tell the story of my own father. In 1901 he applied for the grant of a patent protecting a process to use tung oil, imported from China, for insulating varnishes. This patent application was the first application for a polymerization patent. The varnish industry realized immediately the tremendous importance of this patent and of the process for which protection was sought. The Association of the Varnish Industry, a corporation registered in Germany, together with importers and other manufacturers, filed objections against the patent. It went up through the divisions of the Patent Office. The inventor risked his whole property, and the property of friends as well, on the successful granting of a patent. The association applied to the Supreme Court but was unsuccessful. Later each member of the association filed a new suit in the first instances in the Patent Office, and again the case went through the courts, until the Supreme Court gave the patent to the inventor—just when the 17 years were over. The significance of the patent is shown by the fact that in 1903 the United States imported 2,998,000 pounds of tung oil, whereas in 1904 they imported 9,161,000 pounds. The increase of the import was a direct result of the invention.[26] The inventor became a chemist of very high reputation, but other people became rich.

[23] Duisberg's Memoirs, Leipzig, 1933, p. 48.
[24] Speech in London in honor of Sir William Perkins, Perkins Jubilee Edition, p. 54.
[25] Meinhardt, Entwicklung und Aufbau der Gluehlampenindustrie, p. 43.
[26] Mattiello, Protective and Decorative Coatings, vol. I, p. 16 (1941).

Digitized by Google

All these instances show how between 1877, the year of the enactment of the patent statute, and the outbreak of the war, the German patent law was perverted; it became a means of monopoly control; private inventors who tried to use patents for their protection without giving in to the demands of the monopoly powers were defeated by the patent procedure.[27]

The development of substantive patent law went in the same direction. Herman Isay set forth a new doctrine of patent protection,[28] namely, that the patent protection should not be limited to the text of the patent itself but should cover any new process opened by the patent. For practical purposes Isay's distinction between the scope of the patent itself and the scope of the patent protection means that knowledge of the patent itself is not sufficient to establish whether or not a certain process is protected by the patent, or what shall be considered as new.[29]

An even more general principle than the patent field, the principle of individual freedom to do business, as provided in the "Gewerbeordnung" of 1300[30] had the same fate. The process of perverting the free economy was favored in a very fateful way by a shift in public opinion in disfavor of free competition.

The victory of the opinion considering free competition as a chaotic economy deprived the institution of competition of its character as a regulating factor in our economy. The conception of competition was defined by the courts in a thoroughly anarchistic way.

It is really astonishing how easily economic competition and institutions hostile to dictatorship were sacrificed to the private monopolistic trend. The liberal institution of competition was even handed over to the monopolistic powers as an instrument of the destruction of free competition.

The result of this development is that the principle of free competition has been transformed into the opposite principle of the senseless fighting between economic powers. Everything is permitted, even if it should be outside of the pale of business, and inconsistent with law or good morals. During the period between 1879 and 1914 the whole development was based on the decision of the Government and the Reichstag to enact a high tariff statute, and could have been changed by the Government in the same way.[31] The motion was at least a reminder to industry that the Government had the power to act. Here is one of the essential differences in the conditions before and after the First World War.

Patents could be influenced by the Government in the following ways:

1. By compulsory license.[32]
2. By governmental use of patents according to administrative decisions.[33]
3. By refusing compensation for use in the interest of the Government.[34]

Another element, however, in favor of the Government was its bureaucratic and military control of all that was going on in the country. The significance of the bureaucratic and military power of the German administrative machinery and of the social preponderance of the people connected with it, before 1914, cannot be overestimated. Although the groups in social life which were later to destroy the Government already were in the making, society did not develop

[27] The leading lawyer of big business in Germany, Herman Isay, was of other opinions. He called the patent policy a weapon of small industry (Isay, Hermann Die Funktion der Patente Im Wirtschaftskampf Berlin 1927).

[28] Isay Patentgesatz, p. 191.

[29] Besso's Limitation of Patent Protection, Zurich, 1934, pp. 13, 14.

[30] R. G. B. L. 1900, p. —.

[31] An amendment to the tariff statute was proposed by a member of the Reichstag, but was rejected. This proposal provided that import duties would be abolished "if syndicates, trusts, cartels, conventions, etc., should demand unreasonable prices in Germany." (Memorandum relating to Cartels, 1st part, p. 2.)

[32] The amendment to the patent statute of June 6, 1911 (R. G. B. L., p. 243), provided: "If the owner of a patent refuses to permit someone else to use his invention in spite of the offer of a reasonable fee and guaranty for the payment of the fee, the other person can be granted the permission to use the invention, if such grant is considered necessary in the public interest (compulsory license), and the permission may be granted with certain limitations or may be granted under certain conditions."

[33] Sec. 5, par. 2, provided:

"The patent has no effect to the extent that the invention shall be used for the Army, Navy, or in other ways in the public interest, in accordance with the determination of the Government. However, the patent owner is entitled to ask for reasonable compensation from the Reich or the state which applied in its interest for the limitation of the patent protection. If no understanding between the patent owner and the Government can be reached, the court may determine compensation."

[34] The court had no jurisdiction to decide about a case against the Government for infringement of a patent if the patent had been used to accomplish strictly governmental aims (Isay, par. 4, note 71).

Digitized by Google

the stage of "Pluralisme" in which private groups subordinate the national policy to its own interest and ends.[35]

How did the world react to this development in Germany? Very slowly, just as after 1933. The first reactions were patent reactions. The English statute of 1907 [36] provided the loss of the patent for nonuse.

The result of this measure was an increasing influence of the German industry in the economy of the British Empire itself. The then existing two large dyestuff groups (Agfa-Bayer and Badische-Cassella) acquired large terrains in England "which is fit to serve for plants for the dyestuff industry and even for the manufacture of all inorganic intermediaries or tar distillations." [37]

Duisberg seemed not too much concerned about the reaction to the German expansion. He said:

"We studied the conditions in all directions and we learned surprisingly that coal is much cheaper in England than in our country, that the wages for workers are much lower than in our country, that the taxes to be paid and the other governmental burdens are much lower than in our country. The only thing that is more expensive is the freight, which is not important at all." [38]

The United States did not follow the English example. It did just the opposite, it signed a treaty with Germany on February 23, 1909, providing:

"ART. I. The provisions of the laws applicable, now existing or hereafter to be enacted of either of the Contracting Parties, under which the nonworking of the patent, working pattern (Gebrauchmuster) design or model carries the invalidation or some other restriction of the right, shall only be applied to the patents, working patterns, designs or models enjoyed by the citizens of the other Contracting Party within the limits of the restrictions imposed by the said Party upon its own citizens. The working of a patent, working pattern, design or model in the territory of one of the Contracting Parties shall be considered as equivalent to its working in the territory of the other Party."

At this time the United States was in its development state. The desire to get the most modern products the world produced was so great that even the highest tariffs introduced by Congress did not prevent the German importers from bringing their goods in. The United States was not too seriously interested in the international market and in competing with English or German firms. The American firms found much bigger profits in using the natural resources of their country than they could ever hope to get out of the relatively small profits from production which required experience and expensive and risky research with strict organization.[39]

---

[35] The conception of "Pluralisme" is used first by Carl Schmidt, the analyst of Germany's constitutional law—who is highly gifted with intelligence but lacking character, and served all governments which Germany had after 1914 as a capable adviser.

[36] The Patent and Designs Act, 1907 (7 Edw. C. 29, sec. 27, 2d), provided:

"The monopolistic rights under a patent shall be deemed to have been abused in any of the following circumstances: (a) if the patented invention be one capable of being worked in the United Kingdom, and is not being worked within the United Kingdom on a commercial scale and no satisfactory reason can be given for such nonworking. (b) If the working of the invention within the United Kingdom on a commercial scale is being prevented or hindered by the importation from abroad of the patented article by the patentee or person claiming under him or by persons directly or indirectly purchasing from him or by other persons against whom the patentee is not taking, or has not taken, any proceedings for infringement. (c) If the demand for the patented article in the United Kingdom is not being met to an adequate extent or on reasonable terms. (d) If by reason of the refusal of the patentee to grant a license or licenses upon reasonable terms, the trade or industry of the United Kingdom or the trade of any person or class of persons trading in the United Kingdom or the establishment of any new trade or industry in the United Kingdom is prejudiced and it is in the public interest that a license or licenses should be granted. (e) If any trade or industry in the United Kingdom or any person or class of persons engaged therein is unfairly prejudiced by the conditions required by the patentee, whether before or after the passing of this act, for the purchase, hire, license, or use of the patented article or to the using or working of the patented process."

[37] Duisberg, Association of German Chemists, 1903, p. 1962 ff.

[38] Duisberg, Association of German Chemists, 1908, p. 1962 ff. Is it not interesting that Duisberg immediately used this opportunity to threaten his political adversaries by saying the following:

"Our high-tempered persons in the political field should be warned to be careful. For the time being we only intend to use our patents in England, which is at the present time important for use, and whereby England does not get a stronger position in the chemical field. All that the English newspapers wrote about this is exaggeration. We came with 2 chemists and 50 workers. What does that mean as compared with 500 chemists and 18,000 workers which we employ here? But let us be clear about that. The beginning is made and who knows what comes? England may enact a statute providing high tariffs. Under such circumstances we should be careful and not go too far in our social legislation in order to make more inconvenient for us the conditions of production."

[39] Duisberg, The Influence of Leibig on German Chemical Industry, Popular Science Monthly, April 1904.

Digitized by Google

An interesting attempt to resist the abuse of the patent system was made by Switzerland, which refused to give any chemical patents up to 1906. The German chemical industry was very much excited about this fact and urged the German Government to include a special provision in the commercial treaty between Germany and Switzerland requiring that Switzerland grant such patents. Interesting are the figures mentioned by the speaker for German industry. He alleged in 1902[40] that Switzerland established six or seven chemical plants "which manufacture in my opinion about 20 to 25 million francs of dyestuffs. Switzerland needs about 5,000,000 francs. About 15,000,000 francs dyestuff are exported out of Switzerland. The export of dyestuffs from Switzerland to the United States amounts to about 5,000,000 tons—even from Switzerland to Germany dyestuffs are imported." The speaker indicated that the import amounted to 3,000,000 francs.

The second reaction was the increase of import duties. Here the United States was leading, while England did not dare to leave its traditional policy of free trade because of extremely difficult problems which were bound to arise inside of the British Empire in connection with a high tariff policy. As high as the tariffs enacted by the American legislators may have been, the special provisions avoided any serious threat to the German policy as described above.

Duisberg[41] pointed out that the tariff policy of the United States did not affect the import of intermediary products which could be transformed in the United States by German-owned plants. He indicated that he did not expect a change of the tariff, but he clearly anticipated the day in which that might happen under other circumstances.

Another interesting example showing that the American tariff policy did not seriously affect the German development can be found in the production of pharmaceuticals. Duisberg's Memoirs (Leipzig, 1933, p. 88) mentioned that the import duty amounted to almost 100 percent without interfering with the German export policy.

The third reaction was to paralyze the German cartels by cooperating with them through international cartels. The cooperation was necessarily connected with the abandonment of the policy of dumping. This development of international cartels was still at an early stage of development and did not go too far before 1914. Interesting instances are:

(*a*) The chloride of magnesium cartel.[42]

(*b*) The bromine agreement.[43]

German industry could agree to join these cartels without giving up its general policy, because its production in these two fields had not the slightest difficulty in being sold, hence the expensive dumping process was unnecessary from the German point of view. In spite of the general interest which these early inter-

---

[40] Congress for Industrial Property in Hamburg, May 5–7, 1902, Record, p. 143 ff.

[41] Duisberg's Memorandum, submitted to the members of the boards of all dyestuff firms in Germany in 1904.

[42] This cartel had seven members which participated in the turn-over of chloride of magnesium in accordance with certain established quotas. If new members should join, all members had to give up the same percentage of their quotas. The cartel regulated production and aimed "to prevent overproduction and to bring in order offer and demands in accordance with the needs of the market" (report on the bylaws of this cartel in the memorandum about the cartels, p. 23). The cartel was at the same time a price-fixing cartel. The total turn-over of chloride of magnesium amounted in 1904 to 200,000 dozen. Most of this production was exported, especially to Great Britain, although Great Britain manufactured this article herself. It was very important for the German development that the sales to Great Britain were secured. Therefore agreements were made with the English producers providing that the English producers regulate the production in accordance with similar provisions.

[43] The brome agreement was connected with the chloride of magnesium convention by the fact that the members of both conventions were at the same time members of the potash cartel. The brome producers entrusted the entire sale to the Vereinigten Chemischen Fabriken zu Leopoldshall, A. G., in consideration for a payment of 1 percent of the turn-over.

While all brome was sold to the above-mentioned corporation in Leopoldshall, the brome derivatives were sold to an international cartel to which English, German, French, and Italian firms belonged. The management of this cartel was entrusted to the Vereinigten Chemischen Fabriken auf Aktien vorm E. Schering (predecessor to Schering Kahlbaum in Berlin, the parent corporation of Schering, Inc., of New Jersey).

These two international cartels represent two different types of international cartel organizations, since in the first cartel the production and prices of two countries are regulated by agreements between two cartels, while in the second form only one cartel existed whose sales agency distributed orders and profits. Both forms of the cartel are equally important for the purpose of avoiding dumping.

Digitized by Google

national cartels have, they are not to be considered as an efficient defense against all industrial oppression.

The international patent cartels in existence before 1914 had rather the aim of giving foreign corporations, which controlled an invention, access to Germany, than German firms access abroad. In 1883, in the electrical bulb industry, the system of exchange of information and patents developed which finally led into the so-called "Patent Interessen Gemeinschaft," on March 15, 1911. This association, of which the General Electric Co. was a member, guaranteed each member a free license under all the patents of all other members and the joint protection of these patents against any attack. Outsiders could only get a license if the association decided unanimously to grant such license. Since in this field the American development preceded the German, we are more interested in the American inventions than the German. A similar case could be found relating to radio patents. The Marconi Wireless & Telegraph Co., Ltd., an English corporation organized in 1897, controlled the patents relating to the use of radio on ships. Before 1911 Telefunken could not prevent Marconi from controlling the wireless even on German ships. However, Telefunken's research produced new inventions in other related fields, while Marconi became interested in participating in the German market in other fields than in the wireless telegraph field. Therefore Telefunken and Marconi agreed to exchange patents, which agreement was the basis for a very efficient world distribution system. Telefunken became a partner of Marconi in the Belgian Campagnie de Telegraphie Sans Fils, and a world-wide distribution of markets was in the stage of preparation when the First World War broke the contract for the time being.[44]

All in all the resistance of the outside world against the new German cartel and tariff system grew from year to year. At the same time German industry developed more and more. The clash between Germany and abroad became unavoidable. The German fortress from which goods could be sold cheaper throughout the world, became, in an increasing manner, an encircled fortress which in the final end could save its existence only by broadening its own field. The more immediate the danger of war, the greater became the significance of the Government as the best customer of industry.

In 1914 Germany entered the war as a nation which appeared to be unified to a degree never before seen, but as a matter of fact the Government was only the most powerful group among a certain number of groups which existed inside of the nation—the cartels, the unions, etc. The question was, how long could it remain the most powerful group, especially since the outbreak of the war deprived the Government of its most effective way of control, the control over the tariff policy. How long could the full outbreak of the crisis, the development of "pluralism," be avoided?

In the very beginning of the war the Government, directly or indirectly, as the largest customer could dictate conditions. But industry realized more and more that the Government had no choice other than to give in to the demands of the cartel and, to a certain degree, to the demands of the unions. Even if German economy had not made any real preparation for the war[45] Rathenau and Colonel Koeth, the organizers of the German war economy, nonetheless found ready the entire equipment they needed; namely, an organized economy which could easily produce a maximum of certain goods, restrict production of other goods, and replace some scarce products with newly invented substitutes. The whole machinery of the cartels, built up by private groups for the purpose of cornering markets, distributing profits, etc., which had been dependent on governmental policy, became for the moment the tool of the Government's war policy. The cartels were made the basis of all the so-called "war corporations." When these corporations were established it was not only intended to provide a supply of raw materials by seizure, but to purchase goods in the domestic market and to import other goods. All involved persons were accustomed to see products, orders, and profits distributed and divided.[46] Von Beckerath,[47] who had a very good chance to observe the activities of the cartels himself, made the statement that this above-described "war service" was very profitable business for the cartels and the industrialists behind them. The longer the war went on, the more the Government had to learn that it was absolutely dependent on the fullest

[44] Jahre Telefunken.
[45] Ernst Heymann, Die Rechtsformen der Militaerischen Kriegswirtschaft.
[46] Heymann, Die Rechtsformen der Militaerischen Kriegswirtschaft, p. 137.
[47] Von Beckerath, Die Moderne Industrie Wirtschaft, p. 257.

Digitized by Google

cooperation of industry, which was expected not only to produce but to substitute its goods to a very large extent.

In connection with the present discussions concerning certain artificial substitutes for raw materials developed in Germany but not used in sufficient quantity in the United States, I do not see any reference to the experiences which Germany had under the compulsion of the blockade of the last war. It is very interesting to read the report of Carl Duisberg about the war work of the predecessor firms of I. G. Farben. In reading this report we discover the basis of the development which became of greatest importance in connection with the present war.

(*a*) Rubber problem in the last war.[48]

(*b*) Nitre and nitrogen in the last war.[49]

---

[48] "An important question which interested us very much was the manufacturing of synthetic rubber. Many years before the war broke out we had already approached the problem as to how it could be arranged to manufacture a synthetic rubber to replace that found in plants in the tropics, which was so necessary to our industry. After many attempts we were successful, in August 1909, as a result especially of the work of Dr. Fritz Hofmann, in manufacturing synthetically a chemically pure isoprene. This product was produced from the derivatives of coal tar. Isoprene is a carbohydrate. This could be transformed into rubber by polymerization. This rubber was identical with the natural rubber, as the experiments of Dr. Harries proved. We were successful in transforming the higher homolog of isoprene, methyl isoprene or dimethylbutadiene, and the lower homolog of isoprene, butadiene, into two new forms of rubber. These two forms were elastic and similar to natural rubber, but different in several respects.

"Although we could not hope to manufacture isoprene as cheaply as the product obtained from natural rubber, we nonetheless began to manufacture methyl rubber, which was rich in carbohydrate, since it was much easier to produce and had a higher degree of homolog. This was done at a time when natural rubber was very expensive (20 reichsmark per kilo). Therefore it was not difficult to put the artificial product on the market.

"Experiments of the Continental Rubber Co. and Gutta Percha Co., in Hanover, made with methyl rubber to produce soft rubber, and experiments of Traun in Harburg to manufacture hard rubber, proved that we could already produce a product which was usable for certain purposes, although not equal to natural rubber. Therefore, we began to manufacture methyl rubber, and the Continental Co. in Hanover promised to use any quantity which we were able to produce. As far as we knew this methyl rubber was used exclusively, mixed with natural rubber, to manufacture tires. Tires which I myself made with this product proved that it was good and usable. For many years my cars had no other tires than this kind. They proved to be absolutely equal to tires made with natural rubber. The car of the Emperor was provided with tires made from the synthetic rubber of the Continental Co. After we had manufactured some 1,000 kilograms of this product and delivered it to the Continental Co., they observed that tires manufactured from a mixture of methyl rubber and natural rubber became old quicker, that is, deteriorated faster, than tires produced from natural rubber alone, if the tires were in storage longer than a year. In the meantime the price of natural rubber had decreased to 5 or 6 marks. Therefore no greater interest existed any more in the artificial product. The Continental Co. refused to take further quantities of our methyl rubber, and the manufacture of this product was suspended.

"On the other hand, the experiments in the research laboratory were continued without interruption, to improve the quality of the product and to decrease the costs of manufacture. We tried to use not only methyl rubber but also the two other synthetic forms of rubber. New experiments were made, together with some rubber companies in our neighborhood, especially with Clouth in Koln. We tried to use the different synthetic rubber forms for all purposes.

"When the war broke out we suffered from a lack of three raw materials necessary for the production of methyl rubber. Methyl isoprene (dimethylbutadiene) was being manufactured out of acetone by reduction with aluminum in the presence of mercury salt. All three products could only be used for the most urgent needs of the army. Therefore we had no chance to make methyl rubber. When, however, the war went on and the lack of rubber became greater and greater, we tried again to make use of methyl rubber. We began to produce it, using a very much improved process. Clouth in Koln found when they vulcanized methyl rubber which is easily affected by air, that 50 percent sulphur gave a hard rubber. Clouth used for this purpose 'Vulkacite' invented by us, to prevent oxidation. This hard rubber so manufactured was much superior in its electric resistance to hard rubber manufactured out of pure, natural rubber. The resiliency of methyl rubber produced by us was not inferior for certain purposes, even to the best natural rubber. Since the market broke down after the war, the continuance of this manufacture was no longer of interest for the industry" (Duisberg's Memoirs, Leipzig, 1923, p. 101 ff.).

[49] "A great problem solved by us was the problem of synthetic nitrogen. Before the war Badische manufactured, in accordance with the Haber and Bosch process, ammonia out of the nitrogen and hydro out of the hydrogen in the air. When the war broke out a plant was just being established for the production of 150,000 tons annually of ammonia. In the meantime Ludwigshaven began to double its plant.

"Since it was necessary to give our farmers as much nitrogen as possible, the production of calcium nitrogen in the plant in the neighborhood of Koln was raised to 120,000 tons. We had the Bavarian plant in Trostberg which produced 25,000 tons. Two new governmental plants were established in the Province of Sachsen and in Upper Silesia. The Reich made a contract with the Badische to establish a plant with a productive capacity of 150,000 to 180,000 tons of ammonia sulfate. This plant was established in the neighborhood of Merseburg and began work in 1917. This plant was called Lunawerk and was organized by Badische. Germany became selfsufficient in nitrogen before the war, although it had to bring to Germany more than 50 percent of its needs from foreign countries. A large number of new nitrogen compounds were being used as fertilizer, for instance, chlorammonium, ammoniunitrat, Harnstoff, ammoniasulfatsalpeter, Luena or Montansalpeter, Kalkammonsalpeter, Kalksalpeter, and Nitrophoska. Because of the needs of the war, German industry became independent in another field, the supply of sulfur" (Duisberg's Memoirs, p. —).

Digitized by Google

C. Metallurgical products in the last war.[50]

The Government had the power not only to grant compulsory licenses to firms interested in the field of these new inventions, but also to prevent the publication of any patent which might be important from the point of view of national defense. The Government did not use this power in many cases, especially so far as the big industries were concerned. No publication is available which gives us information on this point but I know of only one case in which the Government prevented the publication of a patent. In this case the inventor and the applicant were relatively weak.[51]

The two most efficient uses the Government made of its economic influence were the following:

1. The Government itself became a manufacturer, especially of aluminum. Research prepared by the Metallgesellschaft and Griesheim Elektron were utilized for the establishment of a large Government aluminum plant, which has remained under the control of the Government up to the present date.[52]

2. The establishment of compulsory cartels and the compulsory merger or closing of plants was brought about. Insofar as the industrialists could not agree in the organization of cartels, and the Government could accordingly not rely upon such cartels in certain fields, the Government established compulsory cartels compelling the industrialists to become members of this cartel.[53]

The practical history of the compulsory associations as established during the war shows, however, that it was not so much the Government command which regulated these compulsory cartels as it seemed to be. After the cartels were once established it could be quickly seen that the big industrialists inside the compulsory cartel had a more or less absolute leadership. Very often, if not in most cases, the suspicion arose that the compulsory cartels were only made on the request of the big fellows because of the refusal of one or another of the small industrialists to join.

There is no doubt that at the beginning of the war the Government had a very strong psychological position which was not used at all. In spite of all conservatism the Prussian militarists were very much influenced by the economic liberal theory that the Government should not interfere in business. The Government lost its chance very soon. From month to month a change in public opinion with regard to social classification could be seen. Public opinion, even in the groups of militarists themselves, considered a "Wirtschaftstuehrer" as the type of person replacing the generals and high officials in the social classification. The ideology of the Government had nothing to offer against the demands of technologists, industrialists, and financiers. Walther Ratheneau made the only attempt to give an ideological basis to the fact that industry and business had to devote themselves to the aim of the Government in time of war. Ratheneau, who organized the German war economy to a very large extent, established for the first time the character of an enterprise as a kind of public

---

[50] "I do not like to finish this chapter without discussing the success of chemistry in the metallurgical field, where chemistry opened ways which seemed to be very difficult. For instance, manganese is not only important as a means of alloying in the preparation of steel, but it is also important for use as a means of deoxidation. Many experiments were made to save manganese as an alloying material and to substitute it as a deoxidation means. Very soon we learned to save manganese. Calcium carbide was discovered as a full substitute for manganese in connection with deoxidation, and thereby we cheapened the manufacture of steel by 8 pfennig per ton. The large increase of the price for nickel and chrome made it possible to utilize mines in Germany which could not be utlized earlier. The Stahlwerke Richard Lingenberg in Remscheid introduced steel which was poor in nickel for these purposes. With the help of electro-steel ovens wolfram would be substituted for molybdenum. The best mine for molybdenum oxide lead was found in the neighborhood of Garmisch in Bavaria.

"To make us independent of foreign countries in the field of aluminum, three plants were established in Germany at places at which electrical power was cheap and ample. These plants supplied the entire German needs of aluminum. We used in the beginning Hungarian bauxite as raw material, and later German clay.

"In Bitterfeld a new plant for the manufacture of a new metal, just discovered, was established. This metal, called "electryon," was made out of magnesium alloyed with manganese and aluminum. This metal was manufactured out of a byproduct of phosphate salt fabrication of chlorine magnesium. Electryon was a very good substitute for aluminum" (Duisberg's Memoirs).

[51] The patent involved dealt with the substitution of fats and oils in printing.

[52] In the above-noted information of Duisberg about artificial rubber (Review for Electro-Chemistry, 1918, p. 369) we find the following statement:

"A new big plant for the production of aluminum will be completed very soon. This plant will not use foreign bauxite but German clay, wherefore we will now be independent from foreign markets in the field of acetic acid and also in the sale of aluminum, and even in peace we will be able to substitute large amounts of imported copper by domestic aluminum."

[53] The idea of compulsory associations was not unknown in the German law. Such compulsory organizations were known for quite a long time, as for instance, fishery associations.

Digitized by Google

good, subject to the commands of the Government, which alone can be responsible to the national state.[54]

When the war was over the development can be understood more easily if we have in mind the following facts:

1. German industry lost its foreign subsidiaries, patents, and foreign property (art. 238, 243 Versailles Treaty).

2. Other countries could freely establish high tariffs while the German Government lost its power to regulate tariff legislation independently.

3. German industry was confronted with a large number of new European states, such as Poland, Czechoslovakia, Jugoslavia, etc., which had all new tariff borders and tried to become self-sufficient as much as possible.

4. German industry had to import raw materials which, up to 1918, it had in its own territory, especially zinc, which had now to be imported to a large extent from Upper Silesia, which was under Polish jurisdiction.[55]

5. German industry, on the other hand, had a very much greater capacity than it had before the outbreak of the war, because during the war new plants, technical processes, equipment, etc., were established, without any consideration for future economic development. The same happened in other countries, which up to the war sent their raw materials to Germany to have them transformed into finished products.

6. The Government itself lost not only its tariff power but also its social standing. The industrial class prevailed in the social structure of the nation.

7. The Government had to rely upon industry in connection with the performance of many provisions of the peace treaty, for instance, that requiring the export of a certain amount of coal dyestuffs to the victorious countries (Versailles Treaty, art. 232), which provision could only be performed by the entity of the dyestuff industry.

8. The German Government had to rely upon industry in the problem of demobilization and of transferring the returning Army men to jobs in industry.

9. The Government lost its position as the largest customer for armament purposes, and could not reestablish this position.

Two outstanding events made the situation much worse. First, the inflation: While the government could not cancel its foreign debt, and while its domestic debt reappeared almost immediately, especially the debt connected with the peace treaty, industry undertook to cancel its own debt by the inflation policy. During the inflation the industrial merger movement developed very fast. The statistics relating to corporations in the time of inflation does not give us any true picture, because of the establishment of business organizations which were practically without foundation. The increasing number of corporations revealed by statistics does not make clear the fact that during the inflation period the control of the entire German corporation capital began to be confined to an always decreasing number of people. In this connection it may be stated that according to the statistics of 1940 the management of 170 German corporations controlled 56 percent of the entire German business capital.[56]

Second, the threat which existed during the whole inflationary period that a merchant might lose his entire capital by selling his products for paper marks without regard to the repurchase costs, became the basis for the cartel agreements between producers, wholesalers, and retailers, which will be discussed later on.

The worst immediate effect of the inflation on the German economy was that industry, which already had a capacity much exceeding any possibilities of a regular German market, increased its technical capacity to a very large extent. Then came a period of rationalization—and again German capacity grew to a never expected efficiency, with the help of American loans.

After this was accomplished the crisis began, for there was practically no idea as to what to do now with this tremendous industrial power.

Any student of the cartel situation, especially with regard to patents, should understand this development above discussed, and its effect on the relations between government and industry.

Pre-war history, the development during the war and this last development established a complete domination of German economic life by the industries which used these devices: The monopolization of products, the patent monopoly

[54] Von Kommenden Dingen, 1918.
[55] Bergmann, Der Weg Der Reparation, 1926, p. 112.
[56] Frankfurter Zeitung, November 16, 1940.

Digitized by Google

power, and predominant capital power. In all fields in which any group could exercise one of these powers the industrialists, after they completed their own cartels, informed the wholesalers that they would only be supplied if they became members of the wholesalers' cartel, and the wholesalers informed the retailers that they would only be supplied under the same conditions as those under which the industry supplied them. A typical example of the conditions in a field in which the production was monopolized is the association of German screw and nut producers. This association made an agreement with the association of screw wholesalers. Section 2 of the bylaws of the association of the wholesalers reads as follows: "The purpose of this association is the regulation and improvement of the German screw business, especially the fixing of prices in the screw trade and the performance of eventual contracts to be made with the association of German screw and nut producers Düsseldorf."

No member of the producers association (and there was already in 1929 no producer not included in the cartel) could supply any wholesaler or anyone else who was not a member of the trade association. The agreement between the two associations regulated the kind of products to be sold and the price and conditions of delivery, not only between manufacturers and wholesalers but also between wholesalers and retailers or any other kind of customers.

There was already after the inflation practically no field in the coal, iron, steel, or metal industries in which the producer had not an absolute control over the sale of the products, beginning from his plant up to the last consumer.

It would not serve our purpose to describe many instances of these contracts. However, it may be referred to decisions of the cartel court which described typical situations in which businessmen came into this cartel.[57]

A case typical of the second situation, the monopolization based on patent power, is the case of Telefunken. Telefunken controlled the so-called Fleming patent DRP 186,084 relating the the protection of cathode detector tube and electrode tube, and patents relating to the circuit.[58] That gave Telefunken, up to 1941 a subsidiary of Siemens & Halske and A. E. G., an absolute control over the radio industry, wireless industry, and all enterprises manufacturing medical equipment using such devices (for instance, equipment to examine heart activity and auditory disturbances). In the field of radio the Government induced Telefunken to give a certain number of licenses. However, from the very beginning, the grant of any license was dependent on the joining of a cartel. Whereas the full effect of this system did not become clear before Hitler came into power, the transformation of the associations of the radio industry and the radio trade by the National Socialist Government amounted to a subordination of an existed commercial system under the political command of the party. The regulation of the market was accomplished before Hitler, as a market regulation by patent, effective from the manufacturer to the last consumer. That could be accomplished although the patent refers only to a relatively small part of the sold product.

The National Socialist Government was so much concerned about the fact that one of the important Telefunken patents came to a natural end that the Government by decree provided that the patent "market regulation" shall continue.[59]

As far as other uses of the tubes were concerned, it was extremely difficult to get any kind of license from Telefunken. I tried myself, on behalf of a client who had a very excellent reputation as a scientist, to get a voluntary compulsory license for the manufacturing of equipment for testing the human hearing. The only success was that Telefunken itself brought the article on the market.

The German monopoly situation has been discussed only too often[60] in connection with the I. G. Farben case. This case may be classified between the group of monopolization by patents and the group of monopolization by capital power. The chemical industry began more and more to apply for a patent on practically everything. The research laboratories of the few remaining chemi-

[57] The cartel court is organized in accordance with the provisions of the cartel decree of 1923. The cartel court was abolished in 1940 and its tasks were entrusted to the Reichswirtschaftsgericht. The jurisdiction of the cartel court or of the Reichswirtschaftsgericht exists, for instance, in cases in which a member of a cartel alleges that the continuance of his membership is inconsistent with public interest and cannot be expected.

[58] Otto von Bronk, Telefunken Patents—Twenty-five Years Telefunken.

[59] Kartell Rundschau, 1939.

[60] Some people may be inclined to believe that I. G. Farben is the only case.

Digitized by Google

cal works which were connected among themselves by cartel and working agreements, studied systematically entire fields and closed them by a large number of patents. That was true in the development of plastics (the participants were I. G. Farben and Röhm & Haas), and in most pharmaceuticals (in which three groups of enterprises participated: (1) I. G. Farben, (2) Merck and Boehringer Knoll, connected by joint sales agency and agreement relating to the exchange of information, etc., (3) Schering-Kahlbaum, A. G.). Each publication in any chemical review or each patent application of any applicant in any country is given to the staff of the research laboratory to find anything that can be patented, no matter if the patent is a patent of evasion or supplement or protection against other inventors. But in fields in which the patent situation had theoretically permitted to build up competition, the factual power of the capital investment made such attempts impossible.

The capital to be invested to build up efficient plants in the field of the heavy industries and the chemical industry, as well as in the machine and metal industry, became so tremendous that only very rich groups could try to go into any of these fields. As soon as a plant was completed, as for instance the nitrogen plant in Leuna or the plant of the Vereinigte Aluminumwerke in Lauta, a competitive plant would be not only a disaster for the new entrepreneur but also for the old entrepreneur and for the public. Therefore, no bank participated in bringing out money for such purposes. The Vereinigte Aluminumwerke obtained a patent relating to the manufacture of aluminum out of clay in 1919. If it had tried to use this patent its just completed plant would lose its value, therefore the Vereinigte Aluminumwerke gave a license to its Italian subsidiary, but did not use this patent until a number of years later.[61] The monopoly powers based on patents on capital used the same device of binding the wholesalers and retailers and of control of the last consumer as the above described cartels did.

So we learn that the Government was confronted with the fact that the entire production and market conditions were regulated by the management of a number of corporations which from year to year either decreased or became dependent on each other. What does it mean if we say that the Government took care of the domestic policy of the nation, whereby production and market was regulated by monopoly powers and the wages and salaries by the unions of labor and employers? The industry was confronted with the problem which Hitler later expressed by the statement: "Export or die." At this time not the German offensive and the foreign reaction thereon had to be studied, but for the time being the situation was reversed. The outside world, including the new states, acted first, by high tariffs, by depriving Germany of her tariff power, by a license system for imports, for doing business, and for establishing subsidiaries, by seizure of patents, trade-marks, etc.

None of the devices used by the German industry before the last war could help. The only governmental measure or policy which helped was the agreement between Germany and Russia relating to the financing of German goods to Russia. German industry did not have any other chance but either (*a*) to find loopholes in the exclusionary system of the world for whatever reasons these loopholes may exist; (*b*) to find help from "within" the outside world.

These two ways can be shown by two interesting instances of the chemical industry.

America excluded German dyestuff and chemicals after peace was reestablished, by the Dye and Chemical Control Act of 1921,[62] which provded in paragraphs 27 and 28 the following:

"If there is no similar competitive article manufactured or produced in the United States then the ad valorem rate shall be based upon the U. S. value as defined in subdivision (d) of sec. 402, Title 4. For the purposes of this paragraph any coal tar product provided for in this act shall be considered similar to or competitive with any imported coal tar product which accomplishes results substantially equal to those accomplished by the domestic product when used in substantially the same manner."[63]

If there is any competitive article manufactured or produced in the United States the import duty is much higher.

The German industry learned to use this provision for its own benefit in two ways:

---

[61] ———.
[62] 42 Stat. 18.
[63] This provision has been taken in the Tariff Act of 1930.

Digitized by Google

1. *Nitrogen.*—On July 11, 1930, the manager of the nitrogen plant of I. G. Farben made the following statement in the committee of the German Reichstag investigating the structure of the Germany economy:[64]

"Serious endeavors to manufacture synethetic ammonia have been made in the United States, France, England, and Italy since 1917. However, before the armistice, only in the United States was a plant built up, after the chemical foundation sold licenses on the German nitrogen patents of the Badische Aniline Soda Fabriken. On the request of the government the General Chemical Company began to build the plant in Sheffield on the Tennessee River in 1917. The plant was called "Nitrate Plant No. 1." It was intended to put this plant in operation in June, 1918. However, up to the present date no regular production has been taken up. The process which was supposed to be used was prepared by the General Chemical Co. This process was distinguished from the process used in Oppau by lower pressure and by the use of catalizers, which however, were already described in the patents of the Badische Aniline Soda Fabriken. During the last years the Nitrogen Engineering Corporation, a subsidiary of the General Chemical Company, established plants on the Niagara River and in Peoria, Illinois. All these plants including plants which were supposed to use a process developed by the Fixed Nitrogen Research Laboratory, Bureau of Soils, Washington, using a process very similar to the Haber-Bosch process; some of these plants close especially because of a lack of profitability. Other plants were transformed into plants manufacturing other products. The plant of the Niagara Ammonia Corporation has been sold to the Dupont concern in the spring of 1927 and closed down immediately after the sale. In the plant of the Commercial Solvents Corporation in Peoria the hydrogen is now used for the purpose of manufacturing 'methanol'."

This allegation of Mr. Bueb could not be investigated, but his allegation practically amounts to a statement that nitrogen has not been produced in this country in spite of the seizure of the patent. The often alleged excuse that it could not be produced because the patents did not describe the process sufficiently is verified by the following statement of Mr. Duisberg:[65]

"The military control commission demanded that we shall not only inform it about the processes used for the production of powder, explosives, and gas, which we certainly did in pursuance with the peace treaty, but that they also be informed about the processes by which we manufactured raw material, such as nitrogen acid, ammonia, and sulphuric acid, which are the basis of every chemical production plant. Thereby the businessman of the entente intended to be enabled to produce peacetime products as cheap and as good as we did before the war.

"We were required to give to the entente the processes in all peculiarities, with drawings. We were requested to inform them how our heatings were constructed, etc. They demanded that we inform them how we produce sulphuric acid out of plaster, and how we produce cement as a byproduct. Our cement was superior to any cement in the world, since it was about 50% stronger. Furthermore, we were required to inform them how we made nitrogen after we were separated from Chile and could no longer import any Chilean nitrogen. We were requested to inform them even of our unsucceesful attempts to transform ammonia into nitrogen, to help them from following the same erroneous ways we went through until we were successful. That was not enough—they wanted to have more. They wanted to know the Haber-Bosch process for the manufacture of ammonia out of the nitrogen of the air and hydrogenation. It is obvious that had nothing to do with explosives or with war, but it had to do with our manufacture of fertilizers. These demands came only to make economic profit."

The German Enqueteausschuss III contained on page 188 a list of the import duties to be paid for nitrogen manufactured by Leuna (I. G. Farben) in the different countries. This list states that the import to the United States is free, under position 1583, in accordance with paragraphs 27 and 28 of the Tariff Act of 1922 as quoted above. So the loop-hole was found to bring nitrogen in the United States.

After 1923 the German processes were improved to a very large extent and new patents in this field have been taken out.

The import in this country was entrusted to the Synthetic Nitrogen Corporation which was under formal control of an American friendly to I. G. Farben interests.

---

[64] The Chemical Industry Enqueteausschauss III, p. 150.
[65] Duisberg's Memoirs, p. 134.

Digitized by Google

2. *Dyestuff.*—The Alien Property Custodian of the last war was especially active in regard to dyestuff corporations. He repeatedly stated that the German dyestuff monopoly is of extreme danger to the safety of the United States. Therefore he answered in the Senate committee the question if the German dyestuff firms should be excluded forever, very much in the affirmative. On February 3, 1919, he sold 558 patents and 1 trademark belonging to the Elberfelder Farben Fabriken Bayer & Co. to Sterling Products Co.[86] The dyestuff patents of other firms were sold to the Chemical Foundation, Inc. These two groups of patents came back under the control, or at least strong influence, of the predecessers of I. G. Farben. The dyestuff patents sold to Sterling were not of real interest to Sterling Products, which was only interested in pharmaceuticals. Sterling Products sold its dyestuff interests to Grasseli Chemical Co. In 1924 the Grasseli Chemical Corporation came to an agreement with Elberfelder Farben Fabriken Bayer & Co. and another predecessor firm of the I. G. Farben, the Farberwerke vorm. Meister Lucius & Bruning. In accordance with this understanding the Grasseli Chemical Co. assigned all dyestuff patents to a new corporation, the Grasseli Dyestuff Corporation, to which Bayer assigned its present and future United States patents and trade-marks relating to the manufacture of dyestuffs, granted or applied for after the end of the war. Bayer acquired an interest of 50 percent of the dyestuffs while Grasseli kept 50 percent. Later the so-called Hoechster Farbewerke acquired a subinterest under Bayer. In 1925 the participation in Grasseli Dyestuff Corporation was changed when Grasseli Chemical reduced its participation to 35 percent, Bayer reduced its participation to 30 percent, while the rest was assigned to H. A. Metz as trustee for Hoechster Farberwerke and to other predecessor firms of I. G. Farben. In the same year this company became the exclusive selling agent in the United States for all dyestuffs of the I. G. firms. The personnel of the General Dyestuff Corporation was obtained by combining the dyestuff sales personnel of the Grasseli Chemical Co., which was taken over by du Pont, with the dyestuff personnel of the firm H. A. Metz and Kuttroff Pickardt & Co. Grasseli changed its name to General Dyestuff Corporation, which was optioned to I. G. Farben in 1926. In 1928 I. G. Farben acquired all the shares of General Dyestuff Corporation and the name was now changed to General Aniline Works.

The second line by which the German dyestuff corporations returned in the American market was the following: "the president of I. G. Farben, Dr. Bosch, made a statement in the German Enqueteausschauss (p. 121) which indicated the payment of royalties on patents formerly owned by German firms, to the Chemical Foundation Co. by the I. G. Farbenindustrie." This statement has obviously the following facts in mind. The Chemical Foundation issued an import license after the War Trade Board had given its consent, to Kuttroff Pickardt Co., Synthetic Nitrogen Products Corporation, General Dyestuff Corporation. Kuttroff applied for licenses on certain of the patents of the Chemical Foundation, all of which were granted: Patent Nos. 1,232,551, 1,232,552, 1,201,850, 1,251,954, 1,342,790, 1,344,671, 1,391,664, 1,082,719.

These licenses in conjunction with the above discussed devices opened the way for the import of important German dyestuffs.

These two devices show how the German industry came back in regard to new patents and in regard to old patents.

As soon as that was accomplished the manufacturing plant of the General Aniline Works had the immediate effect to exclude any other foreign competitor, for instance, Swiss competitors, by the above-mentioned tariff provision of the American tariff act. Other domestic competition could be excluded by patents newly taken out for dyestuffs.

Here we have the basis for one of the most important devices which gave the German industry a chance in spite of all exclusionary legislation: the establishment of subsidiaries which had all benefits provided for domestic corporations by exclusionary legislation. Any kind of exclusionary legislation worked now in favor of the German subsidiary.

In 1932 the Imperial Chemicals joined the German-Swiss-French cartel, whereby the entire front outside of the United States was consolidated.

This international cartel controlled within the United States the following subsidiaries in the dyestuff field: General Aniline; Ciba, Inc.; Sandos, Inc.; Geigy, Inc.; and Cincinnati Chemical Corporation. They controlled furthermore in almost every Latin American country sales agencies of great importance,

[86] See Report of Alien Property Custodian submitted to Senate, 67th Cong., 2d sess., Doc. No. 181.

Digitized by Google

and several manufacturing plants. Although the American subsidiaries did not become, as a matter of form, members of the cartel, they were put under active control and had to follow instructions of the management of the cartel members. The principle of instructing subsidiaries was strengthened by the use of the patent system. Since the cartel firms had patents in each and every country of the Americas it has a patent system that could exclude the United States subsidiaries from the Latin American market just by assigning only the American patent to the subsidiary, wherefore the subsidiary would violate the patent granted in another country to another firm if it ever would supply any firm outside of the United States without the permission of the patent owner. This form of international cartel is directed against the interest of the United States from without, using the subsidiary device and the patent device as means from within.

In other kinds of international cartels the situation is different. If the German position was not strong enough, neither to prevent the establishment of any plant in the United States and thereby to use all benefits granted by the United States tariff legislation, nor to exclude foreign and American competition by establishing subsidiaries in this country, they had to look for an American enterprise which was interested in those patents, either because they had other patents which could be made much more useful and valuable by exercising the license of the German patents, or which were afraid of the use of these patents in this country as a competitive means against their own products, and would be willing to pay substantial amounts of money either to participate in the German patents or to exclude them or to exchange their own patents for the German patents. In this situation another form of international cartel was established. An interesting instance is the electric bulb production. As we learn above, already before the outbreak of the last World War a patent association existed which made it, as a matter of fact, possible to exchange all General Electric patents with all patents of other electric bulb manufacturers. This system was reassumed as soon as the last World War came to an end. At the end of 1924 the entire world electric bulb production outside of the United States was formally cartelized by two agreements:

1. General patent and development agreement.
2. Agreement establishing the Phoebus S. A. (Compagnie Industrielle pour Le Developpment de L'Eclair A. G.) it being just in the same form as we learned it in connection with the first German cartel Rheinische Kohlen Syndikat.

We learn that the Phoebus corporation has to guarantee to a certain extent the distribution of markets, the standardization of products and restriction of production. The fact that the United States is not a member of this cartel because of the antitrust legislation did not impress the president of the German electric bulb company, Osram G. m. b. H. K. G. He made the following frank statement:

"When we made this contract (the world cartel) we were already confronted with a large system of license contracts by which the manufacturers came in closer connection with each other and by which their markets have already been distributed and their interests equalized. Especially we had already very extensive collaboration agreements with the American firms by which mutual patent protection has been obtained and by which also in a territorial aspect a certain distribution has been reached. Therefore we have no reason to be excited about the American law discussed by Dr. Isay (who just had spoken about the American antitrust legislation before Mr. Meinhardt, chairman of Osram, took the floor), but we could use all agreements with the Americans which are made on perfectly legal basis, namely, as patent license agreements to accomplish the now intended aim of the distribution of markets." [67]

The participation of one American enterprise in a world cartel mostly using the device of patent exchange became a very common one. However, the full

[67] Wilhelm Meinhardt in the Kartell Stelle of the German Association of Manufacturers, 1929.
Mr. Meinhardt did not make this statement as a mere "lapsus linguae," since in his book on the development of the structure of the electric bulb industry (Berlin, 1932) he made this statement (p. 105):
"It is of special significance that our old collaboration agreements relating to the exchange of inventions and experience which were made between the American and the other enterprises were a good basis even as far as American law is concerned, since the reservation of certain countries for exclusive supply was based on a lawful basis. The world agreement could therefore be certain not to be attacked from the American side. The old agreements were on a sufficient basis to accomplish the aim of the distribution of the markets."

Digitized by Google

consequences of this device did not become clear before Hitler came to power, wherefore its destructive character from the point of view of American security shall be discussed later on.

The only case in which it came to more than a cartel agreement, to a partnership, was the Standard Oil-I. G. Farben case.

Carl Bosch, the president of I. G. Farben, described the purpose of this agreement in the following way:

"In the field of the hydrogenation of coal our position is not easy. Therefore we try to find out the means to cooperate with the big American oil concern, Standard Oil Co. of New Jersey. The field of petroleum industry is so tremendous and is so absolutely under the command of three large concerns that the consideration of a new production in the fight against these concerns would have been very difficult.

"In the nitrogen field the conditions were quite different. When we began to produce nitrogen we knew that we could obtain a certain profit rate, using the available technical equipment. However, in the field of hydrogenation of coal we knew from the very beginning that we needed many years only to decide the question up to the price limit we could compete. Even if we did decide this question we had to spend tremendous amounts of money to transform the experiences made in working with small quantities in a production manufacturing large quantities. The problem of obtaining liquid fuel out of coal is extremely important and its solution is in the national interest. If we had been compelled to fight against the large petroleum companies the financial needs would have been beyond any expectation.

"Therefore, we believed it best to come to an agreement with the petroleum concerns. These concerns have not only a small interest in our process. That is especially true as far as heavy raw oils are concerned, which were used in increasing manner, since the light raw oils are not any more sufficiently available. The turn-over of light gasoline increased very much compared with the total production of oil. At this point our process comes in, since it is possible with our process to transform the heavy raw oils which are easily available into a condition in which they can be used just as the light raw oils up to now. Furthermore, the oil industry has to keep in mind that the natural sources of oil may come to an end, in spite of the fact that we have now an overproduction of raw oil.

"Therefore we made an agreement with Standard Oil relating to the use of our process, to use raw oil in the United States. Our joint research work which was the basis of the establishment of large research plants in three refineries of Standard Oil in the United States proved quite soon that this agreement has to be amended in territorial and in substantive matter. The business of Standard Oil is not limited to the United States but covers all countries of the world. Therefore, it proved to be impossible to develop new processes to use and refine oil and its products in the United States but to restrict the foreign subsidiaries of Standard Oil from using these processes. In a substantive point we learned more and more that we gave important experiences of our coal and tar hydrogenation out of the hand by giving information about hydrogenation of oil, since very close connections exist between these two processes. Relating to the coal hydrogenation which is of importance for Standard Oil, especially in regard to countries which have cheap coal but no natural oil resources, it will become more important for Standard Oil as soon as the natural oil becomes scarce. In regard to this process, however, we had no agreement.

"To meet this situation and to make sure that our processes will be developed with the greatest possible profit, we decided in 1929 to establish a holding company, together with Standard Oil, the Standard I. G. Company, and to assign to this company the right of using all our patents in the field of hydrogenation in all the world outside of Germany. Standard Oil promised to bring in its patents in the same field. We intend to permit not only Standard Oil and its subsidiaries but the other large oil concerns or other proper firms to use our processes in the fields of oil, coal and tin hydrogenation. The management of the new company has been entrusted to Standard Oil.

"However, we reserved for us the right to use our new process in Germany alone and we made a special agreement in regard to the manufacture of gasoline by us for the German market. The conditions of this agreement protect our interests."

Digitized by Google

Bosch's statement makes it clear that it is the principal idea to meet the requirements of the German national defense by producing substitutes, even if more expensive than any available natural raw material: that could only be done if the owners of the natural products were driven from the German market or bribed by high prices not to undersell the substitutes. Bosch, an honest friend of peace, became, against his own wishes, the founder of the National Socialist trade policy.

He states clearly that he had no chance to develop the hydrogenation plants in the fight against the American petroleum firms selling natural oil, because of the impossibility of competing in price with the natural product. The high price was for Standard Oil an inducement, and for I. G. Farben, the condition of developing new processes in the oil field without which any idea of rearmament was necessarily hopeless.

All forms of international cartel agreements, no matter if offensive or defensive, deprived the German Government of its international influence, so even the international policy came in an increasing manner under the control of private groups cooperating with corresponding foreign groups. The list of the members of the committee sent by the Government to Russia contains representatives of cartels and monopolies, although that was the only governmental contribution at this time. Maybe the Russian Government preferred to negotiate with them because of the actual power conditions in Germany.

In 1932, the whole process had developed to the point that the German Government was driven out of the domestic, foreign, and social policy. The attempts of the Chancellors Bruening and Schleicher to restore the State failed. Their only serious attempt to a successful fight can be seen in an emergency decree of the Bruening government decreasing all cartelized and monopolized prices by 10 percent. The effect of the degree was frustrated by many policy devices of the "Pluralistic" powers. In the labor policy the labor unions followed just the same line: to oppose any governmental solution of the social situation and to extend their own powers to the greatest extent. The Berlin subway strike in 1932, was the answer to the attempt of the Government to adapt wages to the depression.

II. THE DEVELOPMENT UNDER HITLER

In 1932 the disintegration of the German state and society came to such a peak that practically any well-organized group of people, knowing the real stage of the disintegration and offering some integrating force, could take over Germany. The integrating force of a new flag, a new song, a new uniform, and a new promise cannot be overestimated, especially after years during which the attempt was made to overcome all difficulties by the application of rationality accompanied by inadequate action.[68]

It cannot be denied that the National Socialist critics of the situation before 1933 realized the dangerous "Pluralistic" development in Germany. They tried to meet the situation by the following means:

1. By unifying German economy and state through the exclusion of any person not in absolute accord with the party in power, from any place and any position in any enterprise, cartel, or other organization (Gleichschaltung).

2. By substituting groups organized as divisions of the "National Socialist Movement" and connected thereby with the Government in place of cartels or owners. These groups were supposed to establish market regulations in each of many industrial fields and to be connected with each other to secure uniform market regulation in all fields of Nazi economy.

3. By weakening the anonymous monopolistic corporations by the bestowal of numerous governmental favors on business enterprises acting under the personal liability of the owners.

4. By governmental supervision of all new investments this empowered the Government to prohibit new investments, to prohibit the establishment of new plants, and to act itself in a competitive capacity with any business firm at any time.

Whoever is interested in comparative law knows the danger of using conceptions of your own law or history in considering the law or history of another country.

[68] "The state is not an entity which issues certain statutes, diplomatic acts, judgments, or administrative decisions. Its real existence is in a process of continuous renovation and permanent resurrection. It is based on a plebescite which repeats itself every day" (Smend Verfassung und Verfassungsrecht Munchen, 1928, p. 18). This condition of the state is what is called integration.

Digitized by Google

Whoever says that in Germany the "state" controls everything should make clear that the German conception of "state" is not identical with the American conception of state. The German state is the most active expression of the National Socialist party,[69] taking control of society in each of its spheres and making subordinate to party anybody at any place in the German society. The process of "Gleichschaltung" did not make the corporations, enterprises, associations, or cartels subject to the "state" as a neutral institution serving the nation, but to the party dominating society and serving the aims of the movement. The process of the "Gleichschaltung" was successful in a very short time. After a few months the party could be sure that in any German corporation, big or small, either all the leading people believed in the "party," or that the "confidential advisers" inside of the board of directors could be trusted enough to control the entire life of these corporations for the "party."

The second means of the program to substitute cartels and owners by "Wirtschaftsgruppen" was much less successful. In some cases the "Wirtschaftsgruppen" took over the functions of the cartels and became the cartels themselves. In others the managers of the cartels became managers of the "Wirtschaftsgruppen." The only two "Wirtschaftsgruppen" to be considered as "corporations" in the conception of the corporate state, established by the "legislature" and the party are the "labor front"[70] and the "Reichsnaehrstand."[71] The "Reichsnaehrstand" is an organization including all persons or enterprises directly or indirectly engaged in the feeding of the nation. It is based on the Fuehrer principle, has public character, and exercises powers of market regulation to a very large extent.[72]

These groups are supposed to regulate their own policy within the scope of the National Socialist Party, but the party command goes so far that not much space remains for the free policy of the fuehrer of these groups. However, in all fields the situation developed quite differently from the idea the National Socialist Party had when it came to power.

It happened just as a noted economist said:

"Since the idea of the corporate state becomes now an actual policy, we have to expect that the economic groups interested in cartelization and monopolization will try to use the corporate idea for their own purposes and for their own private interests. The experience of the last decades has shown us that associations of entrepreneurs and other organizations of interested people become masters of the technique to use any kind of political ideology as soon as it becomes influential, in an efficient and impressive way. The observer of the development after the last war knows how the cartel government made their demands, sometimes under the slogan of labor or freedom of competition, sometimes under reliance of the idea of a planned economy, sometimes under the slogan of an economic democracy, sometimes under the slogan of freedom of coalition. Therefore, these cartels will have the idea to accomplish all under the slogan of the market regulation, what society refused them up to this date. The Deutsche Berwerkszeitung published an article called 'The Cartel Program of the Iron Industry in the Cooperative States." We can expect many new articles about cartels and cooperative states." * * * "If it should happen that the cartel managers should take over the market regulation and thereby get political regulation, no power in the world could avoid that their economic interests will be stronger than the political idea of the cooperative states and will falsify its institutions and destroy this state sooner or later."

Typical examples of market regulations by the "Wirtschaftsgruppen" can be found in leather, radios, and cigarettes. On November 28, 1936, the "Wirtschaftsgruppen" commerce and the "Wirtschaftsgruppen 6" of the German industry agreed on joint conditions of delivery and payment for the leather and shoe business. The performance of this agreement was entrusted to the Wirtschaftsgruppen leather industry, wholesale and retail trade. The field of the radio market regulation is discussed in other connections.

In the cigarette trade the producers are organized in a 100-percent cartel, although the wholesalers and retailers are not organized correspondingly.

---

[69] Carl Schmitt Volk Staat, Bewegung, Hamburg, 1934.
[70] Gesetz Ueber Nationale Arbeit, R. G. B. L., 1934.
[71] Gesetz Ueber die Zustaendigkeit des Reichs fuer die Reglung der Landwirtschaft of July 15, 1933, R. G. B. L. I. p. 495; Gesetz Ueber den vorlaeu figen Aufbav Fuehrer des Reichsnaehrstand of September 13, 1933, R. G. B. L. L. u. 626.
[72] Very instructive is Das Reichsnaehrstrandliche Markzusammenschulussrecht, Kartell Rundschau, 1937, p. 516 ff.

Digitized by Google

Therefore the "Wirtschaftsgruppen" commerce interfered to build up joint conditions for the resale of cigarettes.[73]

A much more usual device is the appointment of cartel managers to positions of leadership in the "Wirtschaftsgruppen."[74]

In spite of all legislation favoring the dissolution of corporations and the transformation of corporations and partnerships[75] into smaller business units, the decrease in the number of independent corporations and business entities became more and more clear. German statistics indicate that monopolization in the hands of a relatively small number of enterprises is developing quite fast, very much against the program of the National Socialist party.

The power of the Government to regulate future investment proved to be less a weapon against the extension of monopoly powers than a powerful means to help the cartel organization against outsiders.

In any case, however, under the Hitler government the cartel organizations have been transformed entirely; the entire German economy was devoted to one single new aim—preparing for the rearmament program between March 5, 1933,[76] and March 16, 1936,[77] and completing the final rearmament between March 16, 1936, and September 1, 1938.[78] Without any consideration of the fact that Germany capacity was already enlarged, the war, and other pressures were expected to give priority to the largest capacity and expansion possible. The clearest expression of this policy was the "Vierjahrsplan."

As soon as the whole society is subordinated to one single economic aim and the people in power have sufficient means of persuasion and compulsion to utilize all available personal and material resources, the whole economy becomes a single weapon in the service of this one aim. This unity could be observed during the last war in Germany, and to a certain extent in this country; and it can clearly be seen at the present time in this country. Perhaps having one aim is the outstanding characteristics of totalitarianism.

After the disintegration period it was not difficult to bring the entire German personal and material power, including the cartels, within the orbit of this single aim.

Cartels which had monopolized production up to 1933 were now called upon to distribute the work necessary for national rearmament among the available plants. Cartels further had the task of inducing the various cartel members to enlarge their working facilities and to convert them into rearmament plants.

Cartels were no longer concerned with fixing prices because price regulation was now a governmental function. The Government now provided that prices could be changed only in accordance with governmental regulations.[79] The Government fixed prices by way of the "Reichsnaehrstand" or compulsory carterization, or by applying influence on already existing cartels. We will learn more about the development of the change in the significance of money in further discussions. The price cartels were now transformed into calculation cartels which published fixed schedules of cost calculations, to be respected by all the cartel members.[80]

Cartels previously interested in persuading outsiders to join do not worry any more about that—the Government forced the outsider by compulsory decree to help the cartels in the distribution of rearmament orders.[81]

Governmental power to establish compulsory cartels shifts the power inside of the cartels quite often. If the cartel members having great political influence

[73] "Wirtschaftsgruppen" were based on the Gesetz zur Vorbereitung des Organischen Aufbaus der Deutschen Wirtschaft of February 27, 1934, R. G. B. L. 1, p. —. It is interesting to note that in the very beginning of the National Socialist development an attempt was made to consider the acts of the Wirschaftsgruppen as acts of cartels legally fixing prices, etc. Philipp Kessler, the late fuehrer of the German economy, stated in a letter addressed to the Wirtschaftsgruppen, that they themselves were not entitled to fix prices or regulate markets (Frankfurter Zeitung, June 8, 1934). Kessler left and the Wirtschaftsgruppen became more and more identical with the cartels themselves.

[74] Even the cartel supervision was partly entrusted to the "Wirtschaftsgruppen" whose close connection with the cartels is described above. Erlass des Reichswirtschaftsministers of November 12, 1936.

[75] Gesetz Ueber die Umwandlung von Kapitalgesellschaften of 1934, R. G. B. L., 1934.

[76] The date of the election of the first National Socialist Parliament.

[77] The date of the enactment of the statute relating to obligatory service in the Army.

[78] The date of the ultimatum against Czechoslovakia.

[79] Ueber das Verbot von Preisstelgerungen of November 26, 1936.

[80] Interesting instances are the radio cartel of July 15, 1937, and the casting cartel. The scheme of these cartels is to give the firms some freedom of action in regard to the price but to make clear that the prices they ask are based on actual costs. The cost schedules serve as control guides.

[81] Gesetz Ueber die Errichtung von Zwangs Kartellen of July 15, 1933.

Digitized by Google

cannot accomplish their aim, they threaten with compulsory cartelization or with some other exercise of the power of the Government which can easily be granted by special legislation (for instance coal or potash legislation).[82]

The pre-war industry not directly connected with the armament program, but important in the subsequent development of the armament industry, such as the radio and automobile industries, the cartels were used as a means to enlarge consumption, and thereby production facilities or plants. Consumption was increased by a continuing standardization of products, such as the "peoples' radio sets" and the "peoples' cars." Cartels were used to compel skilled workers who preferred to do business as individual entrepreneurs to go back into plants as employees. The number of retailers in the radio industry admitted into the cartels decreased from 60,000 in 1933 to 32,000 in 1935; and even the number of wholesalers fell from 1,500 to 750.[83]

What was the effect of this new cartel policy on patents? Patents, insofar as the domestic market in Germany was concerned, lost a good deal of their significance and have been replaced in the main by profit devices. The patent owner belonging to a calculation cartel would have an advantage compared with the other members of the cartel. The existence of such a patent would endanger the existence of a calculation cartel.[84] Therefore the patent owner has to get such an unusually strong position inside the cartel that he is able to control cartel policy and to prevent complaints from the cartel members to the party and Government officials. The patent owner is very soon confronted with a demand to give a license to all other cartel members and to look for his advantage in the payment of license fees. Behind the demands of the cartel members the power of the Government exists to grant compulsory licenses without permitting any complaint in any court of the Patent Office.[85]

A patent is no longer the sole means of market regulation by license. When the Lieben patent expired, the Government considered the necessity for prohibiting the establishment of new plants for the manufacturing of radio sets and tubes.[86]

Thereafter, the Secretary of Commerce issued a decree establishing exactly the same situation that existed before the expiration of the patent. The licensing agreements made under the control of the Reich Chamber of Radio, a subdivision of the Reich Chamber of Culture, organized by the statute of September 22, 1933,[87] between the cartel of the producers and the cartel of the wholesalers and retailers, are described best by the decision of the cartel court of October 27, 1934, stating that these patent license agreements amount in themselves to a cartel arrangement. The Government, however, did not draw any conclusion adverse to this decision, even though the cartel court decided in a later case that, although these license agreements amount to a cartel, the refusal to give a license is not inconsistent with public policy. So it was more or less a logical step when the Government, exercising its power to prohibit new investment and new establishment of plants, prohibited by decree what had previously been prohibited by patents under which certain applications for licenses had been denied. The same was accomplished without the existence of any patent.

Patents protecting an invention not of immediate importance in the rearmament field were made useless by cartels. An interesting example is a resolution of the cartel of laundry owners. A circular decree[88] of the association of German laundries—a subdivision of an association of the German textile industry—on December 31, 1935, stated:

"The cartel committee resolved in accordance with Sec. 3 of the bylaws, with immediate effect, the following:

"1. All cartel members are prohibited from using any chemical process using cellulose derivatives for the purpose of starching any kind of laundry. All chemical processes known in Germany at the present time, with the exception of the usual starching process, are covered by this agreement.

---

[82] That may be the reason for the action of the Reich Secretary of Commerce requesting the establishment of a joint sales agency of all producers of brown coal in Middle Germany, while the producers for many years before had only a profit pool and did not, in the majority, seek more (Frankfurter Zeitung, December 16, 1937).

[83] Kartell Rundschau, 1939, vol. 36, p. 225.

[84] The only exception is the case in which all cartel members pay the same license fee, as in the radio cartel (Kartell Rundschau, 1937, p. 294).

[85] Sec. 15 of the Patentgesetz of May 5, 1936.

[86] Frankfurter Zeitung, May 18, 1934.

[87] R. G. B. L., 1933.

[88] The Ueberblick, 1936, p. 11.

Digitized by Google

"2. Because of the extraordinary significance of all these chemical processes, the association of German laundry industry will try to make available to all members this technical progress in a certain form. The members are obliged to obey the orders of the association relating to any later introduction of chemical starching processes."

In this case the patent owner cannot use his patent, and no compulsory license can help him because nobody is asking for such a license. Cartels appear here as the adversary of patents, for the reason that they are made a part of the general system which has to accomplish only one aim—the rearmament. Patents which are not helpful in rearmament shall not be used until further notice of the government.

An opposite condition arises in all cartels active in the field of rearmament. The power of compulsory license is only a formal legal remedy. Of much greater importance is the influence exercised on the members of the board and the leading employees of a corporation, or even on the workers in the plants, by active members of the "party," of the labor front or of similar organizations, to make available all business and technical experience for the rearmament program. An enterprise refusing to cooperate in the accomplishing of a certain plan in the interests of rearmament by not giving a license to the other cartel members, or to other competitors, or to anyone else, cannot be imagined because of the tremendous pressure. Therefore, the fact that statistics do not report many cases of the granting of compulsory licenses does not mean anything about its real importance. The number of cases in which licenses are granted by pressure of the cartel management, or for management of the "Wirtschaftsgruppen," or of the labor front, is obviously very important.[89]

Shortly before the enactment of the new patent statute of 1936, on December 21, 1935, the Reichsgericht held that the creation or maintenance of a monopoly in any field of industry is a sufficient reason for the granting of a compulsory license. In this case the defendant held German Patent 378,330, granted on June 4, 1920, which covered an invention described as an invention "to examine perforated forms used for census purposes by a tool such as a bolt by which it can be seen if one of the perforations is out of place."

The petitioner alleged that he would be compelled to go out of business if he were not granted a compulsory license and, in that case, the defendant would control the entire market for such machines. The Reichsgericht found:

"The Patent Office was right in considering it a matter of public interest that competition between the parties would be impossible if a compulsory license was denied. It is obvious that a compulsory license cannot be granted for the sole reason that the patented invention could not be used without such license. An additional reason for its issuance is necessary. Such a reason may be that the patentee abused his patent monopoly, for instance, by refusing to grant a license and thereby doing harm to the public. But that is not the only point in issue. The public interest may be affected without any abuse of the patent monopoly power only because the existence of two different plants and enterprises is always to be considered as a public interest. In such cases the compulsory license cannot be denied even though no abuses exist."

It is noteworthy that in 1922 the Reichsgericht granted a compulsory license for no other reason than to provide work for unemployed workers. On January 24, 1934, the Reichsgericht repeated this decision and made it clear that this reason was a sufficient justification for compelling the granting of a license.

While we can realize the decreasing significance of the patents in the German domestic market, the situation was quite different with regard to foreign patents owned by German corporations or business organizations.

Subsidiaries and affiliates of the German corporations were also made to serve the one aim to which the entire German economy was devoted, the aim of preparing for rearmament up to 1936 and to rearmament itself after 1936.

---

[89] Between 1877 and 1933 petitions for compulsory license or revocations were filed against 1.5 percent of all existing patents. No official statistics have been published for the period after 1933 which distinguishes petitions for compulsory license from petitions for revocation of patents, but all publications indicate that the number of compulsory licenses is increasing. Compulsory licenses which are now granted by the government were granted under the conditions before the statute of 1936 for the following reasons: (*a*) Improvement of security of production (Reichsgericht January 3, 1927) and security of communication (RG February 14, 1934); (*b*) improvement of health (RG November 30, 1929); (*c*) cheaper production of merchandise necessary for the public (RG November 26, 1930); (*d*) better supply of the domestic market (RG May 27, 1918); (*e*) avoidance of unemployment (RG January 24, 1934); (*f*) increase of export (RG December 21, 1935).

Digitized by Google

The number of instances is too great to give any complete description in this connection. However, it may be helpful to give one instance.

Schering-Kahlbaum A. G. Berlin.—This German enterprise developed from a pharmacy, the "Green Pharmacy" in Berlin. In 1864 it was transformed into an industrial enterprise under the name "E. Schering." It became a corporation in 1871.

The principal products manufactured by Schering are synthetic camphor (included in the production program in 1902), photographic papers (included in the production program in 1904), and pharmaceutical specialties.[90]

Even before the first World War, the German Schering concern had acquired foreign subsidiaries and foreign plants.[91] After the war Schering acquired coal mines, enlarged its production program, developed its business in photographic articles considerably, and merged with C. A. F. Kahlbaum Chemische Fabrik G. m. b. H., Berlin, in 1927, under the name of "Schering-Kahlbaum, A. G."

The reconstruction of Schering's foreign business after the war was especially essential for Schering, because more than 50 percent of Schering's products had been sold in foreign countries. Furthermore, interests in the British Foreign Chemical Producers, Ltd., in London, and in the Lepel Ignition Corporation of New York were acquired. The annual report of 1930 mentioned as principal markets South America, Italy, and Spain. In all these markets the United States appeared to be the strongest competitor.[92]

The following figures give some indication of the scope of the business. The working capital of Schering was:

	RM.
In 1913	60, 465, 954
In 1929	70, 971, 090
In 1939 more than	102, 000, 000

The export of chemical products amounted to 60 percent of the entire business in 1938. In 1938 the export was even greater than in 1929, despite the depression. The pharmaceutical specialties constitute an ever increasing part of the entire export. We read in the annual report of 1938:

"Relating to the future development of the pharmaceutical business, the fact of the export is decisive. The development of the export to oversea countries may be quite different from the development of the export to neutral Europe. It may be an open question whether the former stability of the domestic market will be affected by the additional war demand, because the preparations use less pharmaceutical mass products than specialties. These specialties are often necessary for life and their sales price is very high compared with the price of the raw material."

The United States subsidiary was established in 1930 (Schering Corporation), which acted in the beginning merely as an importer of pharmaceutical products. In 1934 Schering Corporation of New York acquired part of its present plant in Bloomfield, N. J., and began to engage in the manufacture of pharmaceutical hormones. In 1936 Schering, Inc., New York, transferred its assets to Schering, Inc., New Jersey, and the personnel located in New York moved over to Bloomfield, N. J. Similar subsidiaries existed in all parts of the British Empire.

Schering controlled a huge number of patents in the field of certain pharmaceuticals (hormones, camphor, borax, etc.). Licenses under these patents were granted to subsidiaries all over the world.

The organization of subsidiaries did not prove to give sufficient control; therefore, Schering, A. G., entered cartel agreements with German, Swiss, and Dutch companies, pooling all the patents in this field, exchanging information, and drafting patent applications in accordance with such agreements. Each of the partners to such agreement, no matter if Swiss, Dutch, or German, established a

[90] The annual report of 1939 goes so far as to mention the pharmaceutical specialities as one of the most important articles of the Schering concern.

[91] The first subsidiary was established in Russia in 1905, but was seized by the Russian Government in 1914. All over the world subsidiaries have been established (Shanghai, 1922; London, Madrid, Milan in 1925; Buenos Aires and Rio de Janeiro in 1926; Lisbon in 1927; Montreal, Calcutta, and Mexico in 1928; New York and Havana in 1929; and Santiago in 1930).

[92] Forty-nine patents and 34 trade-marks were seized in the United States. It may be noted that the company complained much more about the loss of trade-marks than about the loss of patents: "The trade-marks are lacking, particularly in the United States where we have to start as a new business. Our old trade-marks are in the hands of another enterprise today and is doing a good business. The introduction of new trade-marks is a very expensive matter."

Digitized by Google

subsidiary in this country, which followed, with or without special contractual agreement, the instructions of the parent corporation, which in turn came more and more under the command of Schering-Kahlbaum, A. G., Berlin. Before the outbreak of the present war Schering tried to accomplish what I. G. Farben had accomplished a long time before: to interpose between themselves and their foreign subsidiaries, a Swedish or Swiss corporation, a transaction which did not change the real factor of control and which made detection more difficult.

The National Socialist government used three devices to accomplish their result: (1) The so-called currency control; (2) the control of the personnel of the foreign films by party organization; (3) the influencing of foreign competitors to omit actions important to the national defense of their own country.

The world had experienced anti-inflationary legislation in many countries, particularly in Germany in the years after 1918. Therefore, the world did not realize that currency legislation might have other ends entirely. So it was possible to build up a situation whose significance cannot be overestimated: property belonging to the residents of one state and situated in another state, with control exercised by the residents of the first state even though the property was formally held by a trustee or foreign corporation within the state of the property's location as a special function in connection with foreign trade. The imports of a country can be paid for only through two means:

Either by the export of goods (gold is only one special kind of such goods) or by income from property, especially business interests, of residents of the importing state situated in the exporting state. In a self-regulating, capitalistic economy this function of foreign-owned property is one of the factors that determine the balance of trade. If the amount of income from foreign in the exporting state owned by residents of the importing state is exactly equal to the value of the imports, there is no balance of trade and no need for foreign currency. Without the income from the property in the exporting state the importing state would have an unfavorable balance of trade and the need for foreign currency would be great. In an economy which is planned and regulated by the government, the government will interfere with private property situated abroad to such an extent that it will finally use such property, or the proceeds of such property, to pay for such imports as the government deems essential. In such case the value of the controlled imports will be made to coincide exactly with the value of the income from the foreign property.

The system first mentioned prevails in the United States, and the second has been developed in Germany since 1931. In commenting on an official speech made by Pietzsch, president of the Reich Economic Council, the leading German magazine in the field of currency law,[93] made the following statement:

"Two camps are now established; the one under leadership of the United States; the other under the leadership of Germany. In the United States the traditional principles of economic liberalism are in the forefront—at least theoretically—holding that the world is one unique large market in which each people shall offer what it is able to produce cheaper than others. This system is conditioned by a free and unlimited system of payments. In the German group a number of national economies tries to draw the consequences from bad experiences of the past and establish something new * * *"

The devotion of all German property situated abroad, and the subordination of all rights in such property, to the interests of the Reich, developed in three steps which are disclosed by the several phases of the German currency legislation discussed below:

(1) In 1931 Germany enacted statutes and decrees for the purpose of controlling all transactions which might tend to endanger the already weakened monetary situation of the Reich. The report of the committee of the League of Nations, made in 1934, "to arrange for an inquiry concerning the causes, scope, methods, and results of compensation and clearing agreements," stated:

"Exchange control is only one form of defense against the effects of the general depression on countries whose economic and financial structure was especially vulnerable."

In order to avoid any further danger to the monetary situation in Germany, the statutes and decrees of 1931 restricted the right of a German owner of American property to dispose of such property without governmental approval. Since the laws gave the German Government the positive power to direct the manner of the disposition of such property, the laws were limited to measures necessary for the protection of the monetary situation.

[93] Devisenarchiv, IV, p. 906, August 1, 1939.

Digitized by Google

(2) On September 24, 1934, Germany announced the "new plan," the basic principle of which was enunciated by Dr. Schacht in a speech on March 4, 1935,[94] in these words:

"Do not purchase more than our country can pay for and purchase first what the country really needs."

The private entrepreneur retained the initiative in the matter of purchases; though application had to be made to the government for approval, and the government had the right to determine what was really "necessary" for the country. In commenting on this new plan, Wagemann, president of the Institute of Business Cycle Research[95] stated:

"The principle of free import, which was restricted only by the general currency and duty regulations was substituted by a general control over all imports, the aim of which control was to select imported goods according to the available foreign exchange and the needs of domestic production."

It thus became clear that the ends for which private property owned by Germans, and situated e. g. in the United States, would be used by the German Government, were quite different from those ends for which the property had been used in the first phase of the German currency regulation. In the second phase of this regulation, the assignment of private property could be demanded by the German Government for the payment of debts, contracted by private entrepreneurs engaged in foreign trade with the approval of the German Government, and for other monetary purposes.

(3) The third step was taken in 1937 in connection with the so-called Four Year Plan (Vierjahresplan), and gave the German Government the power to determine what could be purchased abroad, even in cases where the formal contract was between "private" parties. The Nazi regime could dictate to a subsidiary or citizen abroad what foreign property should be purchased. The whole German economy then became dedicated and devoted to one political aim—total rearmament.

Thus the currency administration finally evolved from a measure to protect the German currency from the menace of depreciation to an important means of controlling the entire German economy. And this situation has not been changed by the war.[96] The currency legislation is now used by the German Government as a means to control all "private" commercial activities abroad, and it denies governmental protection to private interests engaged in such activities unless its consent to undertake particular transactions has been secured.

In other words:

"The totalitarian state governs the economy with strong hands; it determines what economic relations towards foreign countries are desirable."[97]

The technique by which private property was placed under the absolute control of the German Government was developed in 1931, and no basic change in law was necessary to accomplish the ends to which the currency restrictions laws were later devoted. This technique is relatively simple. Every foreign security, claim, patent, license, etc., must be registered with, and offered to, the Reichsbank. The Reichsbank can then appropriate it whenever it deems it desirable to do so. No disposition of foreign property owned by a German resident is allowed without permission from the Reichsbank. If such permission is given, the proceeds must be delivered to the Reichsbank or to an authorized agent.

The statutes and decrees relating to the foreign currency are to be interpreted in connection with numerous circular decrees of the central agency for the management of foreign exchange. These circular decrees show that it is the policy of the German Government that no property situated abroad belonging to residents of Germany can be used for purposes not in line with the policies of the Government, and all such property, as soon as usable for foreign exchange, must be used in compliance with such policies.

The question is thus presented as to whether or not German "private property" can be recognized as "private property" in the conception of Anglo-American law, or any other law applying the liberal conception of property. The "private" owners of such property cannot dispose of it definitely or for a limited time by pledge, loan, license, etc. He must offer his "property" to the Reichsbank; which may accept this offer at any time, and take the property for con-

[94] Published in Zentralverlag, Berlin, 1935.
[95] Zwischenbilanz der Krisenpolitik, 1935.
[96] Oberregierungsrat Berghold, Dev. Arch V, 1 (January 1940).
[97] Triepel, Die auswartige Politik der Privatpersonen Zeitschrift fuer auslaendisches oeffentliches Recht und Volkerrecht, IX, 10 (1939).

Digitized by Google

sideration of 2/15 Reichsmarks on the dollar; which is a purely artificial rate, fixed arbitrarily by the German Government, greatly overvaluing the mark, and undervaluating the property.

In Germany the so-called "legal" title remains in the private owner, but his right of disposition is restricted, and the Reichsbank has the positive right to take it in consideration for a purely artificial value. It is thus clear that the distinction between the Russian case and the German case is merely a formal one; for the rights of "private" property have been subordinated in Germany to the policies of the Reich to practically the same extent as the rights of private property of residents of Russia was subordinated to the policies of the Soviet Government.

It might be argued that the German "owner" receives compensation in a situation where the Reichsbank accepts the offer, just as it is argued in the United States that no cloud is cast on the title of a property owner by the fact that at some time he may be deprived of his legal title by an expropriation for public use; in which case he must receive just compensation.

The most obvious distinction between the German and Anglo-American conception of property right is that under the liberal conception the proceeds of a compulsory sale can be used to acquire similar property, such as a piece of land next to the expropriated land, and which land can be used for exactly the same purposes. The German resident, however, who owns foreign property, does not get compensation which equals his previous "property right." His "compensation" is based upon an arbitrary and artificial value. It is true that he had a "property right" which had a "value" in all countries, including Germany. But after German expropriation of the property, he receives compensation which for all practical purposes, represents a value only in Germany and no value in any other country. He must put his property at the disposition of the German Government. Therefore, the position of an American property owner, who may be compelled to surrender his property for a just consideration, and a German "owner" of foreign property, are not comparable.

The second distinction makes it absolutely clear that the two situations cannot be compared, and that the legal status of the German "owner" of foreign property and an American property owner are absolutely different. The American property owner can dispose of his property in any way he may choose. He may rent or sell it and use the proceeds as he may see fit. It is true that under rare circumstances the State may take his property for just compensation, but that possibility casts no cloud on his title, nor does it restrict the way in which his property may be used. The German owner of foreign property, however, cannot dispose of it unless the German Government gives its consent, and he may be compelled to dispose of it by order and for the benefit of the German Government. The end of his "property right" is a sale for the highest price he can get, the money from which must be paid to the German Government. It is clear, therefore, that the German "owner" of foreign property is not an "owner" of anything in the legal conception of that word because he cannot dispose of his property, and can only exchange it for a consideration which he does not get, but which is paid to the German Government who gives in exchange a grossly insufficient value.

"Property right" is difficult to define, but it may be said that in the Anglo-American conception a person has no property right if he cannot dispose of it as he likes; or if he may be compelled to dispose of it against his desires for an inadequate consideration; or if the consideration received for the voluntary disposition of his property does not actually belong to him. This is the situation of the German "owner" of foreign property.

It is extremely difficult to use judicial concepts of one legal system in the understanding of a factual situation in another. However, the attempt must be made so that a sound international picture can be portrayed and so that foreign relations of this country may be worked out within constitutional limitations. The German "owner" of foreign property, as discussed above, has no "property right" under the conception of American law. He has only a special right to keep assets in his name until he is ordered to give it up. It may be said that he is in no way better off than if he had only a mortgage on a property of somebody else. The mark value in Germany is his real and final right, but even that value is determined on an artificial and arbitrary basis; and all tests of a true property right, in the Anglo-American legal conception, are lacking.

In the conception of the new German terminology the "owner" (who may be called the overlord, if the use of feudal conception helps in the understanding of this new order) is the "Volksgemeinschaft," which may be loosely translated

Digitized by Google

as "the whole German people," and whose agency is the German Government. It is the actual "owner" of all property situated abroad in the name of German residents. Such property is not "private" but "public," since all rights of ownership may be exercised by the German Government, and the private nominal "owner" must dispose of such property as he is directed, and, in case of such disposition he will "receive" compensation which in turn he must dispose of as the German Government directs.

It is clear from the foregoing, that the effect of the German currency legislation is to enlarge the sphere of its influence, and to give as much property as possible the character of German "public" property. An effective means to accomplish this is the legal definition of the term "residence" adopted in Germany, under which all persons, over whom even an indirect influence is exerted, are declared to be residents of Germany to the extent that it is in the interests of the German Government for them to be residents.

In the circular decree issued by the chief of the German Agency for Currency Administration of October 22, 1936,[98] it is provided:

"Branches of domestic corporations in foreign countries and legally dependent foreign plants of a resident of Germany, if the place of their management is in Germany [are deemed resident in Germany].

"The same rule must be applied to legally *independent* partnerships and corporations whose seat is abroad, provided its management is in Germany.

"In regard to the determination of where the place of management of partnerships and corporations is, the place where the actual decisions relating to the management of foreign corporations are made shall be decisive.

"These principles which are in agreement with the tax law are to be applied without any limitation only to corporations dealing with the administration of property (including the corporations dealing with the administration of patents and other rights of authorship), no matter what their legal form may be (family endowments, associations, combinations similar to the German association with limited liability) * * *.

"However I wish to assume a foreign place of management in the case of production or sales organizations wherever the foreign management is decisively influenced from Germany * * *. If this treatment, favorable to the interests of the participants and the freedom of handling business arising out of this treatment, should lead to abuses, I reserve the right * * * to include also production and sales organization." [Italics supplied.]

This decree declares American corporations, domiciled in the United States, "residents of Germany" and makes their property thereby "public property" of Germany, if they are under the "decisive influence" of German residents, and if they deal with the administration of property including patents. The difference in the treatment of corporations dealing with the administration of property, and the "Erwerbsgesellschaft" (active commercial enterprise) is explained by the fact that it is to the interest of the German Government to allow active commercial enterprises to operate so that profits can be made; which profits must be transferred to the Reichsbank to the extent that they come into the hands of German residents.

Corporations dealing with the administration of property situated abroad are liable to the same extent as any other "resident" of Germany. If they use this property otherwise than permitted by German law, they will be treated as though such property had been the subject of an illegal conversion. The execution of the decree issued in such circumstances is assured by the provisions of the foreign currency statute which provided that every "resident of Germany who dominates the corporation is * * * also liable."

Since 1936, when the circular decree under discussion was issued, the practice developed in Germany has tended to abolish the distinction between corporations dealing with the administration of property and "Erwerbsgesellschaften." At the present time every single act of an "Erwerbsgesellschaft," which has to do with the administration of property, places such property in the power and under the control of the German Government. If an "Erwerbsgesellschaft" desires to make a "new investment," it must take the amount of money or other property out of its working capital, and such transactions are treated as an administration of property under the currency decrees. The consequence of this is that such property actually loses its character as private property and becomes "public" property.

[98] No. 152/36, D. St.

Digitized by Google

The decrees do not contain a final definition of what a "new investment" is. Senate Court President Dr. Dreist,[99] who suggests that the German practice be interpreted as much in favor of the interest of the domestic dominating corporation as possible, used as a test the determination as to whether an investment is made to increase the capacity of the corporation organized abroad, or only to keep it in the same position as it was at the time of the enactment of the currency law. All assets of such corporations not invested in permanent investments before the decree, and which are not needed for maintaining the position of the enterprise, must be offered to the Reichsbank; and the currency administration is the sole authority to determine what is needed to "maintain the position of the enterprise."

A certain difference between the two forms of corporations is that a corporation dealing with the administration of foreign property is primarily liable under the German law; while in the case of the Erwerbsgesellschaft, the German resident dominating the foreign corporation is liable. He must offer the property of the corporation to the Reichsbank; even though such property is situated abroad, and he must devise the means to satisfy the commands of the German authorities, and he must use his influence so that he can offer everything to the Reichsbank which is not a part of the work of the Erwerbsgesellschaft. Dreist frankly admits that if the offer had to be made directly by the foreign Erwerbsgesellschaft the fact that such foreign corporations are really "German corporations" could not be kept secret.[1]

The fact that all reserves and all property to be used for new investments must be offered to the Reichsbank, puts the entire corporation under the effective control and supervision of the German Government, because it may inspect all books, documents, and reports concerning all transactions to determine whether the corporation really restricted itself to activities recognized to be in the German interest.

In the same sense in which the property of residents of Germany situated abroad may be called "public property" of Germany, the types of corporations through the medium of which the German Government owns and uses property, in its sole interest as instrumentalities of the German Reich, are also "property" of the German Government. Under the present German practice, corporations doing business under foreign charters are controlled and exploited for the purposes of the German Government, if the persons who have any kind of controlling interest in those corporations are residents of Germany. The result of this is that the German Government actually exercises control over all American corporations a majority of whose stock is owned or controlled by residents of Germany. A realistic approach must be made to this situation, and it is obvious that these corporations cannot be treated in the same manner as ordinary commercial corporations. Otherwise the United States will be permitting the legal device of a private corporation to be used for the uncontrolled and unrestricted activity of a hostile foreign government.

The new German theories are absolutely logical in their treatment of "private property" situated in Germany and belonging to residents of foreign countries, or branches of foreign enterprises in Germany, or corporations organized under the German law and domiciled in Germany, but controlled by foreign interests.

Under the new German legal theories no distinction is made between public and private property situated in Germany belonging to owners residing abroad, except in the enforcement of civil suits. The German currency legislation is in fact not only a law establishing the management of property situated abroad and owned by residents of Germany, but is at the same time a law regulating the use of property in Germany owned by residents of other countries. None of such property can be taken out of Germany. All of such property has to be paid into special accounts as soon as it is reduced to money or credits; these can be used only within Germany, and only with the special approval of the German authorities. These special accounts are what are known as "blocked marks." Licenses to use these accounts for purely domestic purposes are now being granted to a less and less extent; this has resulted in a fall in the value of these accounts in other countries to about 10 percent, and these accounts cannot be used to pay for goods exported from Germany. The manner in which goods exported from Germany are paid for will be commented on below.

---

[99] Deutsche Wirtschaftszeitung 37, p. 28 (1940). This paper is the official publication of the Chamber of Industry.

[1] At p. 27.

Digitized by Google

The new German legal theories are not particularly concerned with corporations organized and domiciled in Germany, but under control of foreigners, because these corporations are subject to the German restrictions anyhow. Such corporations are not regarded as foreigners, because under the general rules, corporations cannot send anything abroad, and no payment, even inside Germany, can be made out of profits or otherwise to the foreign shareholders, partners, etc., without approval. The result is that the actual control and supervision of such corporations by the Government is extremely effective.

In spite of such control, it was believed possible that an enterprise, influenced by foreign interests, might take steps which would be harmful to the German currency, and therefore to the German general economic interests.[2] To avoid this the requirement of a permission to transfer interests in corporations was adopted by the German Government as a weapon against the development of foreign influence in German corporations.[3]

The principle of German law that a foreign branch or plant of a German enterprise, which is under a management residing in Germany, is a resident of Germany,[4] and that a plant or a branch of a foreign concern in Germany is also a resident of Germany is surprisingly illogical; but it cannot be assumed that the treatment of a German branch of an American corporation, or other enterprise, as a resident of Germany is a mere technical surveillance. The following decision of the Reich Economic Court (Reichswirtschaftsgoricht) of March 23, 1939,[5] shows how the rule works in practical application. The case was as follows: In a merely technical accounting between the branch in Germany and the foreign principal headquarters of the enterprise, the price for 10 tons of aluminum was assumed to be 65 marks, although "the price adjusted to the interest of the enterprise and the national economy would have been 95 marks." Actually the branch had charged the lower price because the corporation, in order to avoid excessive taxation, did not wish to have profits in Germany. It would have been reasonable if the German tax authorities had used the higher price as a basis for the computation of the profit on the transaction for tax purposes, but the manager of the branch was punished for a disposition of a claim against a foreigner payable in marks, prohibited by section 11, paragraph 2, of the 1935 foreign exchange statute. The court said:

"The basic idea of Section 11, paragraph 2, *is to prevent values corresponding to foreign currency from being transferred to a foreigner* * * *. It makes no difference whether the disposition is to be seen in an agreement to sell goods for a consideration of 90 Marks and later to discharge the debtor as to 25 Marks or to sell the same goods at the outset for 65 Marks in spite of higher price justified by economic reasons." [Emphasis supplied.]

The result of this decision was that the German branch was compelled to offer to the Reichsbank the countervalue of the "just" consideration for the goods, and it illustrates how every transaction between an American corporation and its German branch is subjected to the approval of the German Government. Thus, for all practical purposes, the German branch of an American corporation is treated as a German corporation, but—as was shown above—an independent American corporation, in which German interests are involved, is also treated as a German corporation.

It is argued in Germany that if the German Government should accept the distinction between public and private activities in the field of international practice which is accepted by all "liberal" countries, it would be harmful to German interests, because, for example, Germans are not protected in the United States against private boycott propaganda, while Americans in Germany are so protected. However, in practice, Germany derives a tremendous benefit from the clash between the two schools of international practices. Boycott of the goods of any country can be accomplished in Germany by means of currency control without the slightest publicity, but at the same time the device of "private" property, and its constitutional protection in the United States and other liberal countries, is used to accomplish political aims of the German Government in such countries. At the same time "private" property in Germany belonging to residents of the United States, is brought under German governmental control under the outspoken theory that the protection of the German currency requires this, and under the assumption that Germany regards all the property of foreign-

[2] Devisenarchiv IV, 1318 (Dec. 1939).
[3] Cf. Devisenarchiv, supra.
[4] Currency law, sec. 5, par. 1.
[5] Devisenarchiv, 1939, No. 29, p. 657 et seq.

Digitized by Google

ers as belonging to the economy of their respective countries of which disposition is theoretically possible only in accordance with an international government. Thus, the situation is this: That what a resident of Germany owns in the United States is controlled by the German Government, and can be used by it to any extent it may choose, but what a resident of the United States owns in Germany is also under control by the German Government.

Further illustrations of this unequal situation are suggested by the following: One who has secured a valid judgment in a German court against a resident of the United States may enforce his judgment in the United States, and, after execution, may take the proceeds out of the United States. One who secures a valid judgment in an American court against a resident of Germany, may, under limited circumstances, receive permission from a German court to enforce his judgment there, but if he is successful, he cannot take the proceeds of the judgment from Germany, nor may he use the proceeds in Germany as he pleases.

Theoretically, the American owner of a German patent has the same rights as the German owner of an American patent. Actually, disposition of the German-owned American patent lies with the German Government. Because no assignment of the right located in Germany is recognized in Germany unless approved by the currency authorities, the American owner of a German patent can sell or license his patent only after obtaining permission from the German currency authorities. And such permission is only granted if it is considered to be of advantage to the German Reich.

The most commonly discussed instance of inequality is the situation resulting from the distribution of inheritances. A German resident who becomes a distributee of an American estate gets everything, and can take his inheritance out of the United States, but he must use it as directed by the German Government. The American resident who is a distributee of a German estate cannot take his inheritance out of Germany, and for all practical purposes, gets nothing.

This discussion should make very clear to what extent property of citizens of the United States held in Germany is made to work for the Axis interests. Numerous instances may be shown: The largest German tank plants—Ford, Cologne, and Opel (General Motors); a large part of the German radio industry, C. Lorenz, Schaub, Mix & Genest, etc., are controlled by I. T. & T.; the business machines industry (Elliott-Fisher Maschinen Gesellschaft Berlin, Optima Machine Fabrik A. G., and Deutsche Hollerith Maschinen G. m. b. H. Berlin, controlled by Hollerith; the lock and key industry (Yale) in control of the largest European plant; important food interests (Corn Products); petroleum industry (Standard Oil of New Jersey, Atlantic Refining Co., Pure Oil Co. of Ohio, Sinclair Refining Co.).

All these corporations subject to the German currency legislation could not send one penny out of Germany to their parent corporations in the United States. They were in a pinch. On the one side they were threatened with losing their money in Germany through the increasing danger of a German inflation. On the other side they were prevented from investing any money in American currency. This was exactly what the German Government wanted; it made those firms pliable to its demands. They were encouraged to invest in enlargements of the plants, installation of new rearmament equipment, or in the building of tankers or similar ships which are now parts of the German Navy. Some cases are known in which such investment was only permitted by the German Government under the condition that at least 10 percent of the costs and expenses of the building or establishment were paid for in dollars. Thereby the German Government would not only get the installation of new plants and rearmament equipment but also foreign currency. The patents of all these firms in Germany became subject to all such interferences of the Government and the cartel system and all the other handicaps described above, while, as already mentioned, the patents of German firms abroad became of additional significance, at least from the point of view of the German Government.

All personnel of these firms in Germany became subject to the regulations of the National Socialist Party and the National Socialist labor front, but also the personnel of German subsidiaries and affiliates in foreign countries also became subject to the same regulations and instructions of the party and labor front. The certificate of membership in the labor front was no less a condition for getting a job in a subsidiary or affiliate of a German firm in South America or in this country than it was over there. This personnel, acting under such instructions, could not only observe efficiently the technical work done in such firms or in affiliates of such firms, but they could also report to

Digitized by Google

the authorities to what extent the currency regulations imposed upon the subsidiary or affiliate were fulfilled by such firms. What constituted a permanent threat to the parent corporations in Germany, the patent applications and the patents themselves, thereby obviously became subject to a permanent supervision by the labor front and party.

Foreign subsidiaries and affiliates as weapons for the preparation of rearmament and for rearmament itself had also the important task of making available sufficient foreign currency and to form a permanent tie between the Government and foreign industries.

A great deal of the success of Dr. Schacht in managing to get ample supplies of raw materials, in spite of the lack of gold and in spite of insufficient exports, may be attributed to the fact that all affiliations, licenses, and subsidiary relationships were used to make available the money for the necessary payments. That means that, for instance, a subsidiary such as American Bosch, had to pay royalties on patent licenses and dividends from funds in American banks. No disposition of this money was possible without the approval of the Nazi currency authorities, and these affiliated firms were often advised by the German Government to make loans or to pay license fees for a number of years in advance.

In regard to the technical development much looks today to Americans as a conspiracy in restraint of trade what was only the result of a condition in which one well-organized industry and its country with an absolute clear and determined policy and aim met an industry and a country without such definite and determined aim working in accordance with the principles of liberal economy. Since 1933 the German cartels and monopoly concerns knew very well what their job in the scope of the National Socialist program was. They knew that every research laboratory has to work to find substitutes for raw materials in which Germany is not self-sufficient. They just continued the work where it was left in 1918. The National Socialist Party invented the slogan of self-sufficiency as the ideal of its economy, therewith masking to the outside world its real aims.

The well-organized research directed toward one single aim—the preparation for rearmament—necessarily led to a large number of new processes in the entire field of substitutes and increased exploitation of available material, especially insofar as tin, rubber, zinc, oils, and fats were concerned. Compared with the natural raw materials, these products were inferior. Therefore, the owners of the raw materials in the United States and the British Empire and the American and English owners of such materials situated in the Netherlands Indies and China were not interested in these experiences; even if in spite of the provisions of the currency legislation the German firms offered experiences and information to the British and American firms in pursuance of existing exchange agreements.

Another point has to be made in this connection. The National Socialist Party always understood very well how to use the misunderstood aims of certain groups and to abuse those groups for their own purposes. American business was not immune. The German cartel partner or raw material owner or firm connected with raw material owners did not object against very high prices for their raw materials. We learn in connection with the gasoline case that Dr. Bosch made the open and clear statement that I. G. Farben could only be successful in the field of raw oil production by price agreements with its American partner in pursuance to which the price of natural oil on the German market was so high that artificial German products could compete. The same observation can be made in other fields. In spite of the tremendous rearmament the increase of the import of tin and tin ore was relatively small. The obvious reason was the successful treatment of tin by the German industry, thus saving material. In regard to zinc, Germany established a 50,000-ton electrolytical plant in Magdeburg, which increased the supply of zinc considerably. The writers of International Control in Non-Ferrous Metals[6] misunderstood the significance of this development so much that they wrote the following (p. 722):

"It is increasingly difficult to make satisfactory adjustments in Europe, where the opening of the Magdeburg refinery disturbed the balance between German, Polish, and Belgian industries."

Here we see the basic difference between the standpoints of the two worlds relating to new inventions: The liberal world thinking in terms of "balance," the totalitarian world thinking in terms of preparation for the destruction of balance. The German industry substituted more and more light metals for copper and used

[6] Published by William Yandell Elliott, etc., the Macmillan Co., 1937, vol. 9.

Digitized by Google

extremely expensive methods to obtain copper out of the poor German mines. Of the entire need of 250,000 tons of copper, 30,000 tons came from the German mines in 1938. The price of copper was so high that it was good business for Germany to use even the most expensive processes to make substitutes for copper. Nickel gave way to chrome alloy and chrome ore.

Patent exchange and exchange of information may sometimes be effective in the national interest if the countries to which both partners belong are following basically the same policy. As soon, however, as one of these countries follows a different course of economic policy, the exchange becomes ineffective and only useful in the interest of the country which uses everything for one and the same aim—the aim of rearmament, for which practically any kind of invention can be used more or less efficiently, while the other countries have no use for invention confined to the aims Germany has pursued.

Thereby the situation developed that the German industrialists could use all American experiences for their purpose while the Americans were just not interested in the experiences and patents in the field of rearmament, or of substituting something for the raw materials which America has or controls.

The devastating effect of patent exchange agreement develops in serious political times. If patent exchange agreements do not only exist between a German firm and an American firm, but if relating to the same patents exchange agreements exist between the German firm and Latin-American firms, export from the United States to Latin America becomes impossible while relations under the patent rights exist in South America. A similar situation arises if the German firm does not exchange its patents with a Latin-American firm but keeps these patents itself, in its own name, since in this case the German firm can prevent import to the United States. This patent situation makes it clear that a mere interruption of the agreements between Germany and South America or a mere seizure of the patents in the United States does not reestablish the American right to export to Latin America. International agreements with countries of the Western Hemisphere are necessary in this respect, to accomplish this aim.

Out of the discussions about the development of the German cartel and patent law we learn the following:

1. Cartels may be very efficient political weapons in connection with high tariffs or with patents or with subsidiary corporations.

2. Cartels and owners if at the same time strong and not under efficient governmental control, are dangerous infringements on the rights of a government in the domestic and international field.

3. Patents are used as a basis for cartel organizations in several ways—

First. Patents can be assigned or licensed to subsidiaries in each country, preventing any export by these firms and establishing permanent control over such firms.

Second. Patents taken out by foreign firms only for the purpose of prohibiting the work of American firms in certain fields.

Third. Patents can be exchanged with affiliated firms with the effect that the party obtaining the patent is excluded from any other country but its own.

Fourth. A system can be worked out in pursuance of which all licenses of the patents of an American firm are granted to firms situated in certain countries, while the German partner licenses other firms in other countries, thereby accomplishing an absolute distribution of markets.

Fifth. A patent on one article can be used to control other articles in the international market, as for instance, in radio development.

Sixth. The patent and cartel device can be used as a dangerous political weapon by any aggressive country. That has been done in connection with currency legislation providing for licensing of patents and exchange of information.

Seventh. Patents during time of war have been used to prohibit the export of important articles to countries in which the United States takes very strong political interest.

Eighth. Patents and cartels have been used to increase prices and to thereby make possible the production of substitutes and the increased exploitation of domestic goods.

Ninth. Germany used the patent and cartel device very efficiently in the preparation and waging of the present war.

The conclusions relating to the present bill are so obvious that any further discussion seems to be unnecessary.

Digitized by Google

EXHIBIT No. 133

ACETIC ACID AND OTHER ACETYLENE PRODUCTS

Statement by Irving Lipkowitz

INTRODUCTION

It is customarily claimed that when foreign corporations patent their processes in this country they bring to this country the benefits of foreign inventions and discoveries. Self-labeled international corporations contend that their patent pools with foreign interests bring into the United States valuable processes which would otherwise be unavailable here. Conceivably, if all foreign patentors and the members of these world-wide patent pools operate in accord with the motivating spirit behind our patent laws, to promote the advance of the industrial arts, those benefits would accrue. The practical question is whether we actually benefit, not whether we theoretically could do so. The need for maximum output under the war-production program makes it especially urgent that we determine whether foreign influence over United States patents has hindered our essential industries.

In connection with any analysis of actual case histories involving foreign patentors, it is important to note that the existence of antitrust laws in this country force foreign corporations and world cartels to rely very heavily on technically legal patent arrangements in their efforts to eliminate competition within their industries. Consequently, as will be shown later in detail, United States patents issued to cartel-minded corporations, such as I. G. Farbenindustrie of Germany, have been used with disconcerting frequency to improve their own international position by so manipulating them that production in this country was hampered rather than stimulated.

This analysis is limited to the activities of I. G. Farbenindustrie in a single branch of the chemical industry, acetylene and its derivative products, particularly acetic acid. Primary attention is given to the operations of an international patent pool which was operated here by I. G. Farben and Standard Oil of New Jersey.

ACETIC ACID—ITS IMPORTANCE AND DEVELOPMENT

Acetic acid is one of the most important heavy chemicals used by industry. Last year the United States consumed 293,000,000 pounds of it. The largest single outlet is in the manufacture of cellulose acetate, which required 140,000,000 pounds of acid in 1941. Cellulose acetate is the raw material used in manufacturing rayon, safety photographic film, and an important type of plastics. The second largest field of consumption is solvents, which are used in making paints, lacquers, and varnishes. These two broad categories account for over three-fourths of this Nation's consumption of acetic acid. Other important uses of this chemical are in the manufacture of pharmaceuticals, particularly salicylic acid, which is aspirin, and salvarsan. It is also used in the manufacture of dyestuffs, such as indigo, in the printing and dyeing of textiles, and in the tanning of leather.

The development of the industry in this country has been inhibited rather than stimulated by the manipulation of patents and licenses. At the turn of the century a synthetic process for making acetic acid was developed. Until then it was made by the destructive distillation of hardwood. During the World War about 1915, synthetic production was begun in Germany, and in Canada at Shawinigan Falls, Quebec. This country's inability to get started in the synthetic acetic acid field was dramatically demonstrated in 1917, after we entered the war. To get the acetic acid required by our war industries the United States Government had to subsidize the construction of a second plant at Shawinigan Falls, Quebec, and rely on the private Canadian manufacturer for this vital material.

A plant producing synthetic acetic acid was not established in this country until the process was patent-free. Consequently, the first commercial plant was not built until 1927, at which time the Niacet Chemicals Co. established such a plant at Niagara Falls. Thus, the United States began the synthetic manufacture of acetic acid 12 years later than Canada and Germany did. Even then such production was apparently possible only with the consent of the Canadian producer, as indicated by the fact that this company became a non-third owner of the Niacet Chemicals Co.

Digitized by Google

The importance of the synthetic process is indicated by the rapidity with which it obtained a dominant position in the industry, once it was given a chance to operate. Synthetic acetic acid was superior in many ways to the wood distillation product and cost less to produce. As a result, many wood distillation plants had to shut down while synthetic production expanded rapidly. In 1927, when the first synthetic plant was built here, over 90 percent of this country's acetic acid production was made by the distillation of hardwood. By 1933 only 40 percent of the acid was made by this method, and in 1937 and 1941 only 22 percent of the Nation's output was so produced. In contrast, synthetic acid production rose from nothing in 1927 to 37½ percent of the Nation's total in 1933, 66 percent in 1937, and 70 percent in 1941. During the last 2 years synthetic production would have been even greater if raw material shortages had not developed.

The introduction of the synthetic process not only resulted in the decline of wood-distillation operations but also helped bring about a net expansion of the acetic acid industry as a whole. From 1927 to 1941 total production of acetic acid almost trebled in this country. This expansion was both a stimulus to and a reflection of the growth in the rayon, plastic, film, and solvents industries. The earlier establishment of the synthetic process in this country might well have meant an even greater development of these important acetic acid industries. Although it is impossible to estimate the extent of the loss to this country because of the retardation of synthetic acid production, the fact that such production boomed once the process was introduced indicates that the problable loss was substantial.

I. G. FARBEN-STANDARD OIL PATENT POOL

Patents were instrumental not only in delaying the establishment of the synthetic acid industry but also in hampering the subsequent development. During the early 1930's, I. G. Farben of Germany held the United States patents on a new and promising process for making acetylene the principal material used in the manufacture of synthetic acetic acid. By an adroit manipulation of these patents and by a clever use of its partnership with Standard Oil of New Jersey, I. G. Farben succeeded in preventing the full development and utilization of that process. How I. G. Farben kept this process on the shelf while the demand for acetic acid was rapidly expanding is a complex but revealing story. It shows how United States patents in the hands of a foreign interest, such as I. G. Farben, become a menace rather than a boom to the chemical progress of this country. It further illustrates the harmfulness of such international partnerships as the chemical patent pool between I. G. Farben and Standard Oil of New Jersey.

In 1930 I. G. Farben and Standard Oil organized a chemical company in the United States called Jasco, Inc., which was to develop and exploit new processes for making chemical products out of natural and refinery gases (exhibit 1). Although this joint venture was ostensibly a partnership, each of the two companies owning a half interest and selecting half the governing board, it was in truth under I. G. Farben's control. Jasco was organized pursuant to a basic understanding consummated in 1929 between Standard Oil and I. G. Farben, which agreement provided that in all chemical ventures I. G. Farben would have the compelling voice and Standard Oil would be the junior partner (exhibit 2). To the outside world, however, Jasco was an American corporation, and since it was half owned by so powerful a company as Standard Oil of New Jersey, it was presumably operating under the influence and guidance of that company. By first getting Standard Oil to accept the status of junior partner and then by giving it a 50-percent interest in Jasco, I. G. Farben was able to establish this chemical company under the camouflage of an American enterprise, and yet was able to operate it for all practical purposes as an I. G. Farben subsidiary.

At the time that I. G. Farben and Standard Oil were negotiating their basic understanding in 1929, the German interests were very outspoken in declaring what their policy would be as to future chemical ventures, such as Jasco. High officials of I. G. Farben told the executives of Standard Oil that—

"It was the policy of I. G. not to go into old fields already occupied but to create new industries and new fields; that the I. G. did not wish to go into competition in the United States with the United States chemical industry" (exhibit 2).

Digitized by Google

Standard Oil was thus put on notice that any chemical venture in this country established jointly with I. G. Farben would have to operate on a noncompetitive basis. This attitude on the part of I. G. Farben necessarily deprived the United States of the benefits to be derived from any patent held by I. G. Farben in this country, if the process covered happened to be competitive with already established chemical processes. As will be shown by subsequent citations from I. G. Farben and Standard Oil files, Jasco's efforts in the acetic acid field were foredoomed because of this fundamental limitation.

One of the first projects undertaken by Jasco was the development of a synthetic rubber process. In 1930 I. G. Farben was of the opinion that acetylene would be the raw material for synthetic rubber, and so it concentrated first on the problem of producing acetylene as cheaply as possible (exhibit 3). Toward that end, an experimental pilot plant was established by Jasco at Baton Rouge, La., for the manufacture of acetylene out of natural or refinery gases by a new electric arc process, which the Germans had originated (exhibit 4). The process was far from perfect, and considerable improvements were made by Jasco's research staff at Baton Rouge (exhibit 4).

Sufficient progress had been made by the fall of 1931 for Standard Oil and I. G. Farben to consider what should be done with the acetylene being produced by the pilot plant. At that time I. G. Farben was not yet ready to make synthetic rubber out of the acetylene being produced at Baton Rouge, nor did it seem at all interested in the marketing of acetylene itself. Standard Oil, however, was a large user of acetic acid in the manufacture of solvents, which was carried on by its subsidiary, Standard Alcohol Co. Since acetylene was the basic ingredient of synthetic acetic acid, Standard Oil urged that the Jasco plant's acetylene be used to make acetic acid.

I. G. Farben finally approved the production of acetic acid at Baton Rouge in October 1931. The Germans regarded it "as expedient, prior to developing a butadiene [synthetic rubber] project, to start operating an acetylene arc process and to keep this process within limited bounds as long as the acetic acid obtained therefrom can be used by Standard for its own purposes" (exhibit 3). This line of reasoning clearly indicates that I. G. Farben was very much interested in staying out of the acetic-acid market. It permitted acetic-acid production only as part of its grand strategy in advancing its own synthetic-rubber project, and not because of any desire to establish Jasco in the acetic-acid field. By limiting the production to Standard's own needs, I. G. Farben was able to try out its acetylene arc process and yet adhere to the principle laid down in 1929, namely, that it would not compete with existing industries in this country.

JASCO TRIES TO SELL SURPLUS ACID WITHOUT UPSETTING THE MARKET

Depression conditions in the early 1930's made it extremely difficult for I. G. Farben at one and the same time to produce acetic acid and yet not disturb the market. Small as Jasco's pilot plant was, its acid output was greater than Standard's requirements during the depression years. Jasco, therefore, had acid to sell, but under the rules laid down by I. G. Farben, such acid had to be disposed of without creating competition in the synthetic-acid market.

The marketing of Jasco's surplus acid was not entrusted to Jasco itself or even to junior partner Standard Oil of New Jersey, which had a Nation-wide sales organization. Instead, I. G. Farben delegated this delicate assignment to Advance Solvents & Chemical Corporation, its American sales agent, in order to make sure that nothing would be done to upset the numerous friendly understandings existing between I. G. Farben and American chemical interests (exhibit 5).

This type of sales control and restriction was particularly valuable because it enabled I. G. Farben to keep American chemicals out of world markets by promising in return to keep its own products and those of its affiliates out of the American market. I. G. Farben's attitude was clearly brought out during the negotiations which culminated in the formation of Jasco in 1930. At that time an I. G. Farben official expressed the view that it was desirable in carrying on negotiations with Standard Oil "to see to it that the sale of new products to be manufactured in the United States in conjunction with Standard be entrusted to our U. S. A. sales organization" (exhibit 6). I. G. Farben was fearful that Standard Oil "will get control of a considerable part of the solvents business. Standard will then be in a position to point out that it possesses a

Digitized by Google

sales organization in the solvents field and that it, therefore, sees no reason to entrust the sale of new products to another firm" (exhibit 6).

As I. G. Farben saw it, if Standard Oil were allowed a free hand in the solvents business, it would be marketing large amoutns of such chemicals in the United States, and increase the competition faced by other American solvents producers. Under such circumstances, I. G. Farben felt that Standard Oil would "make itself felt in the United States in a very disagreeable way" and that such a development would "have the consequence that we will see more of American competitors in the world markets" (exhibit 6). It therefore took every precaution to prevent Standard Oil from creating competitive conditions in United States markets among I. G. Farben's friends. Standard Oil,, by accepting these restrictions, not only helped I. G. Farben maintain its strategic position in the chemical world but also helped it restrict chemical exports from this country to the rest of the world, and in that way restricted the development of the chemical industry generally.

When Advance Solvents was assigned the task of selling Jasco's acetic acid the prospects of this newcomer in the acetic-acid market were very good, judged according to normal business standards. A Jasco report of May 1932 concluded that the Baton Rouge plant was "on a sound economic basis" (exhibit 4). Estimated production costs, using cracked refinery gases, amounted to 2.8 cents per pound, and at that time Standard Oil itself was paying the Niacet Chemical Co. 5.18 cents per pound for its acetic acid, while the normal contract price was believed to be between 6.35 and 6.50 cents per pound. Furthermore, it was emphasized that the acetic acid produced at Baton Rouge was superior to the synthetic acid produced by Niacet, because it contained no mercury and therefore could command a better price. Even though the plant was relatively small, being merely a pilot plant, an annual profit of $225,000 could be realized on the sale of acetic acid produced there.

Despite these promising estimates, I. G. Farben's sales agent proceeded very cautiously in the marketing of the acid. Dr. Hochschwender, I. G. Farben's representative in this country, reported in May 1932 to the home office in Germany that the Advance Solvents people believed that "it will be possible to sell the entire production * * * to two large customers whose acetic acid contracts expire January 1, 1933" (exhibit 5). Dr. Hochschwender also stated that "A good sales argument is the fact that our acetic acid is free from mercury" (exhibit 5). He then inquired as to "whether I. G. has commitments which would stand in the way of Advance Solvents selling the acetic acid in the United States. Please do not forget that Jasco is not identical with I. G., and that therefore I. G. does not appear in the market as a manufacturer" (exhibit 5).

Dr. Hochschwender here reveals the double-dealing attitude of the Germans. On the one hand, from the point of view of their international relations and their comprehensive understandings with giant American chemical companies, I. G. Farben is desirous of keeping them satisfied and of creating an appearance, at least, of living up to its bargain. On the other hand, apparently the I. G. Farben interests were not above trying to make it appear that Jasco is an independent enterprise and therefore not a party to I. G. Farben's obligations to other American chemical companies. I. G. Farben replied that "exports of acetic acid from the United States are undesirable," and that "in view of our general acetic acid business we would ask you not to mention, as a sales argument, the fact that the acetic acid produced in Baton Rouge is free of mercury" (exhibit 7). Thus, right from the outset, the Jasco product was seriously restricted because it could not export and even within this country could not use its strongest selling point, its superiority over other synthetic acetic acid.

I. G. Farben was so concerned about not upsetting the acetic acid market that it kept Union Carbide, its most important competitor in this field, informed of Jasco's development. I. G. Farben reported on July 31, 1933, that:

"Union Carbide had been informed in Germany by the I. G. about a year ago that I. G. is working together with the Standard Oil Company in the Ethylene field in U. S. A. Mention was also made of acetic acid produced from methane in a pilot plant in Louisiana" (exhibit 8).

Again, on July 26, 1933, Davidson, of Union Carbide, in a conversation with vom Rath, of American I. G., asked "how the acetic acid project had progressed, to which Mr. vom Rath replied that, as far as he knew, samples of acetic acid were available now from a semi-commercial plant in Louisiana" (exhibit 8).

The first real effort to sell Jasco acid took place in the summer of 1933. On

Digitized by Google

July 14, 1933, Advance reported that it had submitted samples to three companies explaining that:

"I have been extremely careful in these three contacts to get my friends to keep the matter confidential and not let the trade know we are in the field with Acetic Acid or Acetaldehyde at this time, as I would like to place the desired quantities without disturbing the market if possible" (exhibit 9).

Pursuant to its policy of avoiding any action which established acetic-acid producers would find objectionable, Advance tried to make sure that it was not underselling the market. This was not easy since Niacet, affiliate of du Pont and Union Carbide, dominated the market and gave special inside prices to large contract customers. The following procedure was consequently adopted. Standard, whose contracts expired in 1933, would negotiate a new contract with Niacet for the next year. The price arrived at was "to serve as a guide for the contracts of Advance" (exhibit 10).

The first sale of acetic acid was made by Jasco to Commercial Solvents in July 1933. In order to avoid any possibility of price cutting, Advance asked the Commercial Solvents people what they had been paying for their acid and explained that "they did not desire to underquote the market" (exhibit 11). The sale was then consummated "at the price which they [Commercial Solvents] were then paying" (exhibit 11).

UNION CARBIDE ASSUMES CONTROL OF JASCO'S SURPLUS ACID

Despite all this caution, Advance apparently did disturb Niacet's market. On March 14, 1934, the vice president of Union Carbide complained to an official of General Aniline that "one tank car of acetic acid had been sold lately to one of U. C. C.'s [Union Carbide] largest customers and that quotations for further supplies had been submitted to that customer" (exhibit 12). This Union Carbide official went on to point out that when he was in Frankfurt, Germany, "he was informed that the sales policy of Baton Rouge acetic-acid production would be handled in such a way as not to influence the market" (exhibit 12).

This difficulty was settled with remarkable rapidity. A conference was arranged between the Union Carbide man and a Standard Oil official who was on friendly terms with him. As explained in a memorandum from Chemnyco, I. G. Farben's American agent, to the home office in Germany:

"When the two gentlemen met, Davidson [Union Carbide official] pointed out that U. C. C. controlled approximately 40% of the acetic-acid market in the United States and was very much interested in arranging matters so that the market price for acetic acid would not be disturbed by the small output in Baton Rouge. Dr. Haslam [Standard Oil official] told Davidson that the Baton Rouge plant was a pilot plant and that at the moment had no steady output. It was pointed out to Davidson that U. C. C. had been repeatedly advised of this both here and abroad. He was also told that we had no intention of disturbing the acetic acid market by underselling. Furthermore, he was informed that the capacity of the plant was about 4 tons a day at the moment and might be raised 5.5 tons a day by the end of the year * * * Dr. Davidson was not surprised by these production figures and proposed that the Baton Rouge acetic acid should be sold through U. C. C. U. C. C., he said, was ready to pay the market price less 5% for Jasco's acetic acid. Jasco accepted this proposal, and in another conference among Davidson, McLaughlin (Niacet), and the Advance Solvents & Chemical Corporation it was agreed that henceforth Advance would sell Jasco's acetic acid to Niacet at the market price minus 5%" (exhibit 13).

Niacet thus became the sales agent for Jasco, and that ended all possibility of Jasco acetic acid being sold in competition with the product of Niacet, the only other seller of synthetic acid at that time.

Dr. Hochschwender, in commenting on this solution of the acetic-acid problem, stated that "we believe that in entering this agreement we have acted in the interest of I. G. Farben in order to retain good relations with U. C. C." (exhibit 13). Thus did Jasco, the acetic-acid venture, and necessarily the United States patents covering the arc process, become mere pawns of I. G. Farben in its international game of business politics.

Once a definite understanding had been consummated between Union Carbide and Jasco, the former was quick to clamp down on Jasco's market operations. When the meeting took place in March 1934, Jasco's production was running at only 4 tons per day, but it was expected to reach 8½ tons by the end of the year, and to climb to 13½ tons during 1935 (exhibit 14). Nevertheless, on May 15, 1934, by letter agreement between Advance Solvents, which was still

Digitized by Google

Jasco's sales agent, and Niacet, covering the "disposal of your surplus acetic acid," Niacet undertook to sell "up to a maximum of four tank cars per month, with the exception of your requirements for the Pacific coast" (exhibit 15). This ceiling on the sale of Jasco's surplus acid made its expansion dependent entirely on Standard Oil's ability to absorb any increase in output.

AMERICAN PRODUCERS WERE ISOLATED FROM WORLD MARKETS

I. G. Farben being an international chemical company, just as Standard Oil of New Jersey was an international petroleum company, was interested in keeping for itself the largest possible share of the world markets. For that reason Jasco was not given any opportunity to export its products. When the question of marketing Jasco's acetic acid was first raised, I. G. Farben advised its New York agent that "exports of acetic acid from the United States are undesirable" (exhibit 7). Of course, since Jasco was under I. G. Farben's domination, this expression of the undesirability of such action precluded the possibility of Jasco ever attempting it.

A much more difficult situation developed when the Dutch Shell oil interests were negotiating for a license on behalf of their American chemical subsidiary, the Shell Chemical Co., to enable it to manufacture in the United States acetic, propionic, and formic acids. Although the process differed from Jasco's, it was similar enough in its major respects to come within the scope of the I. G. Farben-Standard Oil of New Jersey partnership. It was first decided that they "would need Standard's consent for reasons of fairness because the process is competitive in a sense with the process for the manufacture of acetic acid from acetylene which has been bought into Jasco" (exhibit 16). However, that obstacle was brushed aside by I. G. Farben because "we are particularly interested to satisfy the Bataafsche Co. in this matter because that might make it possible for us to come to an understanding with the same company in another very important field" (exhibit 16).

Shell, being an international corporation like I. G. Farben, wanted the freedom to operate in world markets, and the question of exports became a sticking point in the negotiations. Shell raised a query as to "whether it is possible under American law to insert a valid export prohibition. I. G. said that the export prohibitions are so important that in case they could not be validly agreed upon, no contract would be signed" (exhibit 17).

I. G. Farben wanted to prevent exports not only by Shell but also by its customers. After long months of haggling, Shell agreed that "if and when it should learn that one of its customers was exporting materials, it would stop supplying this particular customer" (exhibit 18). That was not enough for I. G. Farben. It wanted a clause in the license flatly prohibiting such exports by Shell or its customers. What American law permitted or did not permit mattered not at all to I. G. Farben. They were far more concerned with their obligations as a member of the world cartels in these fields. They wrote Chemnyco in January 1939:

"In view of other agreements we have entered into, we will have to insist that Shell impose an obligation on its customers not to export. In our opinion it should be possible to induce Shell to make such a promise. If for technical reasons it should not be feasible to insert such a clause in the text of the contract, it might perhaps be a good idea to exchange letters on this point" (exhibit 19).

The phrase "technical reasons" was manifestly a euphemism for legal restrictions, and consequently I. G. Farben was here blandly suggesting that what cannot be done in conformance with the law should be carried out by means of sub-rosa agreements which ignore and defy the law of the land. The deadlock was finally broken when Chemnyco convinced its parent that Shell could not legally enforce any such obligation on its customers, and that, therefore, they should issue the license upon Shell's promise "not knowingly to sell to others for export from the United States" (exhibit 20).

The potency of the world cartel in acetic acid was graphically illustrated in August 1934 when some American producer had the temerity to export some acid from New Orleans to England. Niacet, upon learning of this rash act, being "very anxious to find out who made this shipment" (exhibit 21), immediately got in touch with I. G. Farben's sales agent, Advance Solvents. As I. G. Farben's agents explained to Standard Oil in passing the query along, Niacet was worried because "this disturbs the whole international acetic acid situation and,

Digitized by Google

July 14, 1933, Advance reported that it had submitted samples to three companies explaining that:

"I have been extremely careful in these three contacts to get my friends to keep the matter confidential and not let the trade know we are in the field with Acetic Acid or Acetaldehyde at this time, as I would like to place the desired quantities without disturbing the market if possible" (exhibit 9).

Pursuant to its policy of avoiding any action which established acetic-acid producers would find objectionable, Advance tried to make sure that it was not underselling the market. This was not easy since Niacet, affiliate of du Pont and Union Carbide, dominated the market and gave special inside prices to large contract customers. The following procedure was consequently adopted. Standard, whose contracts expired in 1933, would negotiate a new contract with Niacet for the next year. The price arrived at was "to serve as a guide for the contracts of Advance" (exhibit 10).

The first sale of acetic acid was made by Jasco to Commercial Solvents in July 1933. In order to avoid any possibility of price cutting, Advance asked the Commercial Solvents people what they had been paying for their acid and explained that "they did not desire to underquote the market" (exhibit 11). The sale was then consummated "at the price which they [Commercial Solvents] were then paying" (exhibit 11).

UNION CARBIDE ASSUMES CONTROL OF JASCO'S SURPLUS ACID

Despite all this caution, Advance apparently did disturb Niacet's market. On March 14, 1934, the vice president of Union Carbide complained to an official of General Aniline that "one tank car of acetic acid had been sold lately to one of U. C. C.'s [Union Carbide] largest customers and that quotations for further supplies had been submitted to that customer" (exhibit 12). This Union Carbide official went on to point out that when he was in Frankfurt, Germany, "he was informed that the sales policy of Baton Rouge acetic-acid production would be handled in such a way as not to influence the market" (exhibit 12).

This difficulty was settled with remarkable rapidity. A conference was arranged between the Union Carbide man and a Standard Oil official who was on friendly terms with him. As explained in a memorandum from Chemnyco, I. G. Farben's American agent, to the home office in Germany:

"When the two gentlemen met, Davidson [Union Carbide official] pointed out that U. C. C. controlled approximately 40% of the acetic-acid market in the United States and was very much interested in arranging matters so that the market price for acetic acid would not be disturbed by the small output in Baton Rouge. Dr. Haslam [Standard Oil official] told Davidson that the Baton Rouge plant was a pilot plant and that at the moment had no steady output. It was pointed out to Davidson that U. C. C. had been repeatedly advised of this both here and abroad. He was also told that we had no intention of disturbing the acetic acid market by underselling. Furthermore, he was informed that the capacity of the plant was about 4 tons a day at the moment and might be raised 5.5 tons a day by the end of the year * * * Dr. Davidson was not surprised by these production figures and proposed that the Baton Rouge acetic acid should be sold through U. C. C. U. C. C., he said, was ready to pay the market price less 5% for Jasco's acetic acid. Jasco accepted this proposal, and in another conference among Davidson, McLaughlin (Niacet), and the Advance Solvents & Chemical Corporation it was agreed that henceforth Advance would sell Jasco's acetic acid to Niacet at the market price minus 5%" (exhibit 13).

Niacet thus became the sales agent for Jasco, and that ended all possibility of Jasco acetic acid being sold in competition with the product of Niacet, the only other seller of synthetic acid at that time.

Dr. Hochschwender, in commenting on this solution of the acetic-acid problem, stated that "we believe that in entering this agreement we have acted in the interest of I. G. Farben in order to retain good relations with U. C. C." (exhibit 13). Thus did Jasco, the acetic-acid venture, and necessarily the United States patents covering the arc process, become mere pawns of I. G. Farben in its international game of business politics.

Once a definite understanding had been consummated between Union Carbide and Jasco, the former was quick to clamp down on Jasco's market operations. When the meeting took place in March 1934, Jasco's production was running at only 4 tons per day, but it was expected to reach 8½ tons by the end of the year, and to climb to 13½ tons during 1935 (exhibit 14). Nevertheless, on May 15, 1934, by letter agreement between Advance Solvents, which was still

Digitized by Google

Jasco's sales agent, and Niacet, covering the "disposal of your surplus acetic acid," Niacet undertook to sell "up to a maximum of four tank cars per month, with the exception of your requirements for the Pacific coast" (exhibit 15). This ceiling on the sale of Jasco's surplus acid made its expansion dependent entirely on Standard Oil's ability to absorb any increase in output.

AMERICAN PRODUCERS WERE ISOLATED FROM WORLD MARKETS

I. G. Farben being an international chemical company, just as Standard Oil of New Jersey was an international petroleum company, was interested in keeping for itself the largest possible share of the world markets. For that reason Jasco was not given any opportunity to export its products. When the question of marketing Jasco's acetic acid was first raised, I. G. Farben advised its New York agent that "exports of acetic acid from the United States are undesirable" (exhibit 7). Of course, since Jasco was under I. G. Farben's domination, this expression of the undesirability of such action precluded the possibility of Jasco ever attempting it.

A much more difficult situation developed when the Dutch Shell oil interests were negotiating for a license on behalf of their American chemical subsidiary, the Shell Chemical Co., to enable it to manufacture in the United States acetic, propionic, and formic acids. Although the process differed from Jasco's, it was similar enough in its major respects to come within the scope of the I. G. Farben-Standard Oil of New Jersey partnership. It was first decided that they "would need Standard's consent for reasons of fairness because the process is competitive in a sense with the process for the manufacture of acetic acid from acetylene which has been bought into Jasco" (exhibit 16). However, that obstacle was brushed aside by I. G. Farben because "we are particularly interested to satisfy the Bataafsche Co. in this matter because that might make it possible for us to come to an understanding with the same company in another very important field" (exhibit 16).

Shell, being an international corporation like I. G. Farben, wanted the freedom to operate in world markets, and the question of exports became a sticking point in the negotiations. Shell raised a query as to "whether it is possible under American law to insert a valid export prohibition. I. G. said that the export prohibitions are so important that in case they could not be validly agreed upon, no contract would be signed" (exhibit 17).

I. G. Farben wanted to prevent exports not only by Shell but also by its customers. After long months of haggling, Shell agreed that "if and when it should learn that one of its customers was exporting materials, it would stop supplying this particular customer" (exhibit 18). That was not enough for I. G. Farben. It wanted a clause in the license flatly prohibiting such exports by Shell or its customers. What American law permitted or did not permit mattered not at all to I. G. Farben. They were far more concerned with their obligations as a member of the world cartels in these fields. They wrote Chemnyco in January 1939:

"In view of other agreements we have entered into, we will have to insist that Shell impose an obligation on its customers not to export. In our opinion it should be possible to induce Shell to make such a promise. If for technical reasons it should not be feasible to insert such a clause in the text of the contract, it might perhaps be a good idea to exchange letters on this point" (exhibit 19).

The phrase "technical reasons" was manifestly a euphemism for legal restrictions, and consequently I. G. Farben was here blandly suggesting that what cannot be done in conformance with the law should be carried out by means of sub-rosa agreements which ignore and defy the law of the land. The deadlock was finally broken when Chemnyco convinced its parent that Shell could not legally enforce any such obligation on its customers, and that, therefore, they should issue the license upon Shell's promise "not knowingly to sell to others for export from the United States" (exhibit 20).

The potency of the world cartel in acetic acid was graphically illustrated in August 1934 when some American producer had the temerity to export some acid from New Orleans to England. Niacet, upon learning of this rash act, being "very anxious to find out who made this shipment" (exhibit 21), immediately got in touch with I. G. Farben's sales agent, Advance Solvents. As I. G. Farben's agents explained to Standard Oil in passing the query along, Niacet was worried because "this disturbs the whole international acetic acid situation and,

Digitized by Google

if such shipments continue, the foreign manufacturers are likely to start shipping the material in this direction and hurt the market" (exhibit 21). They then asked Standard Oil, "Should you be in a position to learn through your Louisiana company who made the shipment, we could be of service to Niacet who would greatly appreciate this cooperation" (exhibit 22). Standard Oil of Louisiana did find out who the culprit was, a wood-distillation producer. It thereby helped I. G. Farben and its fellow cartel members police the world marketing of acetic acid which meant, in this instance, keeping the American product out of foreign lands.

The effectiveness of the export prohibitions imposed by I. G. Farben and the world cartel is demonstrated by this country's official export statistics. They were practically nonexistent from 1927 to 1939, amounting to only one-fourth of 1 percent of domestic production during those years (exhibit 23). No exports at all were reported for 1927 and for the 6-year period. 1929 through 1935. Not until the war came in 1939, with its resultant blockade and shortages, did American producers dare to step into Latin-American and other foreign markets. During 1939 exports were almost as large as the combined total for the previous 12 years, and in 1940 they were three times as large. Even in 1941, with our own domestic demand rising rapidly, exports were still growing. There can be no doubt that the failure of American producers to sell abroad was the result of understandings with I. G. Farben and other foreign cartel members.

By depriving this country of peacetime exports, productive capacity was kept down in this country to the level of local requirements. When the defense and war production programs were initiated here, the United States was at a distinct disadvantage as against Germany and other foreign countries. It had no safety margin of export production and capacity to meet the rapidly growing demands at home. Germany and other foreign producers who were active in world markets had substantial capacity which ordinarily produced for export, but with the coming of war was immediately available for their own war demands.

I. G. FARBEN SHUTS DOWN JASCO'S ACETIC ACID PLANT

Coming back to the domestic situation, Union Carbide's assumption of direct control of the sale of Jasco's acetic acid marked the beginning of the end of the Baton Rouge project. I. G. Farben decided to come to a full understanding with Union Carbide as to the Baton Rouge plant, and even as to the acetylene arc process. At a conference held in Germany between I. G. Farben and Standard Oil officials on May 3, 1935, "it was decided to interrupt the experiments at Baton Rouge, and at once to undertake negotiations wtih U. C. C. In addition an effort will be made to issue licenses to other interested parties, such as du Point, in which case du Pont will have to be restricted to the production of acetylene for its own use, so as not to come into conflict with U. C. C.'s interests" (exhibit 24).

For the first time in the history of the Jasco project, Standard Oil dissented from I. G. Farben's decision. It balked at this effort to shut down the Jasco plant completely because "it did not want to lose its acetic acid customers" (exhibit 25). I. G. Farben ignored Standard Oil's viewpoint, contending that it was not "in the interests of Jasco and I. G." to continue operating the Baton Rouge plant (exhibit 25).

Both parties finally agreed on a compromise arrangement. Jasco was to continue operating the plant provided all costs in excess of $7,277 were borne by Standard Oil alone (exhibit 26). I. G. Farben continued of course to dictate Jasco policy, even though it no longer shared its expenses equally. Furthermore, to prevent Standard Oil from getting the full benefits of the acetylene arc process at Baton Rouge, it was agreed that "experiments, insofar as such cannot possibly be undertaken in the plant in operation, are to be restricted to a minimum" (exhibit 26).

Jasco was permitted to continue operating, not because Standard Oil wished it but because, on second thought, I. G. Farben decided "that it is desirable to keep the entire plant in operation while negotiations with U. C. C. and du Pont are going on" (exhibit 27). Union Carbide inspected the Baton Rouge plant in June and July of 1935 and found the process "of interest to them, not only for acid but probably also for other products" which can be made out of acetylene (exhibit 27). Union Carbide wanted to acquire the rights to this process even though they felt the patent situation so weak that it was "not strong enough to prevent others from developing similar competitive processes" (exhibit 27). Union Carbide's interest in the Jasco process, as expressed by their vice presi-

Digitized by Google

dent, arose out of "their desire to prevent disturbance in the market by a new process" (exhibit 27). A Standard Oil official corroborated this view with the comment that "it would seem that Carbide and Carbon's position on the arc process would be that it is necessary for them to acquire the process as a protective measure" (exhibit 28). This admission coming from the company most likely to be affected by the exploitation of the Jasco process testified to the important role which this process could have played in the synthetic acid industry in this country.

Negotiations between Union Carbide and I. G. Farben collapsed in September 1935 because Union Carbide did not regard "participation in the expansion of the Baton Rouge plant as very essential; and, secondly, that too close a connection between the two groups in a field of such importance to Union Carbide was not regarded by the latter as desirable" (exhibit 29). I. G. Farben had apparently hamstrung Jasco so effectively that Union Carbide was confident that the Baton Rouge plant would never be permitted to disturb the market.

The negotiations with du Pont on the Jasco process apparently were also unfruitful (exhibit 30). From I. G. Farben's viewpoint, when both of these negotiations terminated, there was no longer any reason for the Baton Rouge plant to continue operating. Accordingly, despite the May 1935 understanding between I. G. Farben and Standard Oil, the Baton Rouge plant ceased production in 1935 and never resumed operations again (exhibit 31).

JASCO PLANT WAS NOT CLOSED BECAUSE OF LEGITIMATE BUSINESS CONSIDERATIONS

Apologists for I. G. Farben claim that the Baton Rouge plant was shut down because it had proven to be a failure. It will be recalled that only a pilot plant had been set up at Baton Rouge, which did not at all reflect the economies of commercial scale operation. During the July 1935 negotiations with Union Carbide, I. G. Farben tacitly admitted that the pilot plant then in existence was not large enough for economical operation. I. G. Farben wanted to preserve rights under the Jasco process because Jasco "desired, by expanding the capacity to an economical size, to obtain, within a reasonable time, compensation for this investment from the profits expected (exhibit 27). This statement also revealed that I. G. Ferben had confidence in the profitablity of a commercial-sized plant. Standard Oil was of like mind, having concluded late in 1934 that "considerably greater profits can be realized by increasing the capacity" of the plant "to twice its present size" (exhibit 32).

Standard Oil also rated the Jasco process very highly at the time the Baton Rouge plant came to a halt in 1935. For example, Standard Oil reasoned that if Union Carbide acquired rights to the process they would not use it immediately but reserve it for future use "where appreciable expansion of capacity is required. Carbon and Carbide, from the standpoint of protection, should be willing to pay a reasonable amount, say $250,000 or $500,000, for acquiring the rights to use the process and also to have some control over its use" (exhibit 28).

In July 1935, Standard Oil made an analysis of the comparative costs of producing acetylene and acetic acid by the Jasco process at Baton Rouge and by the Niacet and Union Carbide processes than in use. With allowances for power costs 50 percent higher than those of Union Carbide and on the basis of a plant one-fourth as large as that of Union Carbide, the Jasco process could produce acetylene 25 percent cheaper and acetic acid at practically the same cost as that realized by Niacet and Union Carbide (exhibit 28). Standard Oil contended in this report that, on the basis of these cost estimates, "it is clear that Niacet cannot compete with an arc [Jasco] process at the same scale of production and the same power cost." Under these conditions, the Jasco process would cut the cost of producing acetylene in half, and reduce acetic acid costs by a third (exhibit 28). Again in September 1935, Standard Oil reported that "it has now been very definitely indicated that the production of acetic acid from arc gas acetylene is fundamentally cheaper than from acetylene derived from calcium carbide" (exhibit 33).

As late as October 1935, Standard Oil stated that "we believe that the Baton Rouge E project has a good chance of turning out to be the lowest cost acetylene producer in the world. We propose to put this E project into definite commercial form within the next few months by enlarging the plant into a 20- or 30-ton per day acetic acid plant" (exhibit 34).

The expansion of the plant, as suggested by Standard would not have required any tremendous sales drive. A 20-ton per day plant would account for only 10 percent of the Nation's consumption at that time. No price war would

Digitized by Google

have ensued if this new production did come into the market because, as Hochschwender wrote I. G. Farben,

"It is hardly to be expected, however, that Shawinigan, in order to compete against our product, will lower its selling price in the United States. This is not likely in the first place, because our volume of production is too insignificant, and, in the second place, because the American manufacturers, who are united with Shawinigan in Niacet, probably will not follow Shawinigan in a price reduction" (exhibit 34).

Standard Oil's estimates of September 1935 indicated that expansion of the pilot plant to a 30-ton per day acetic acid plant would have been extremely profitable. Such expansion would require an additional investment of $800,000 but costs would be 25 percent lower than in the pilot plant (exhibit 33). Assuming a selling price for the acid of 5 cents per pound, which is conservative, $442,000 profit would be realized annually. This "represents a pay-off on the additional investment required in less than two years, and a pay-off on the total plant investment in a little over three years" (exhibit 33).

Long after the Jasco plant was shut down, Standard Oil continued to see a promising future for the process. In January 1936 they stated that "we are planning some time this year to expand the capacity of our acetic acid plant at Baton Rouge to 30 tons per day. We believe our process for making acetic acid * * * is the cheapest existing process" (exhibit 35). Again in June 1936, Standard Oil told the Tennessee Eastman Corporation, a large consumer of acetic acid, that "we expected to expand our plant to a capacity of 30 tons per day and might later want to expand up to 60 tons per day or even higher" (exhibit 36).

I. G. FARBEN HAMPERS JASCO'S RESEARCH IN THE UNITED STATES

It will be recalled that under the compromise agreement of May 1935, by which Standard Oil could continue operating the plant, it was prohibited from conducting experiments with the process, except such as can be carried on incidental to actual operation. Since the plant never did start up again, that meant the end of all further research on the process in this country. Standard Oil's subsequent dependence on German research is revealed in a company letter of June 1936. It is there reported that "following the break-down of the Carbide & Carbon negotiation it was determined to await the completion of the I. G.'s acetic acid plant in Germany before deciding whether and on what scale to proceed with the enlargement of our own Baton Rouge plant. The I. G. plant is just now in operation and so far as we know is satisfactory" (exhibit 37).

At Baton Rouge, the research had been conducted by a Jasco staff which was composed of both Standard Oil and I. G. Farben people. But in Germany, I. G. Farben conducted its research without the direct participation of Standard Oil technicians. The results of such research were available to Standard Oil only insofar as I. G. Farben saw fit to report them. In that connection, it is significant that Standard Oil cautiously qualified its reference to the progress being made in Germany with the phrase, "so far as we know."

I. G. Farben apparently made no pretense of keeping Standard Oil, or even Jasco, up to date on the German research being done on the acetylene and acetic acid process. In August 1937, Japanese interests contacted I. G. Farben for information about the Jasco acetylene process. I. G. Farben thereupon asked Standard Oil to be permitted to handle the negotiations, instead of Jasco, because I. G. Farben already has had dealing with the Japanese "and in view of the fact that I. G. have the latest experience on this subject collected in their Leuna plant" (exhibit 38). Standard Oil agreed, and thus I. G. Farben was in a position to tell the Japanese more about the process and techniques than it was revealing to its American junior partner, Standard Oil, without the latter being any the wiser of it.

While I. G. Farben pursued its research activities in Germany unhampered by its Standard Oil ties, it very definitely discouraged similar research in this country, even when it was to be done through the jointly owned Jasco. In June 1937, Standard Oil suggested to Jasco at Baton Rouge that experimentation be conducted on a British process for making certain acetylene products. When I. G. Farben's representatives were asked to consent to such a study, they replied that I. G. Farben had a similar process in its laboratories, and "therefore, under the circumstances," they did "not deem it expedient for Jasco to undertake laboratory experiments in this direction" (exhibit 39). Standard Oil accepted this edict without any show of resistance and within a week wrote to its Baton Rouge

Digitized by Google

people that in view of I. G. Farben's objections and "since any work we would ordinarily do would come under the Jasco field, I suggest that we abandon the problem for the present" (exhibit 40).

The one-sided operation of the Jasco partnership was revealed once more to Standard Oil in 1938 when Shell was negotiating with I. G. Farben for a license to make acetic acid by a process different from that used by Jasco. Five years earlier Dr. Hochshwender had written to Standard Oil "pointing out process in question of interest to Jasco and requesting information * * * to permit further study of possibilities by I. G. Farben in Germany" (exhibit 41). Despite Standard Oil's cooperation, I. G. Farben held in 1938 that the process was out of the purview of Jasco. Standard Oil protested against this view on the rather plausible ground that after helping I. G. Farben with the process, they "do not see that subsequent failure of I. G. Farben to advise Jasco of further experimentation work conducted in Germany and outlined to Shell by I. G. Farben removes process from Jasco fields" (exhibit 41). After this outburst I. G. Farben agreed to make some disclosures as to the process but it never did go to Jasco (exhibit 42). Instead the United States patents were sold in 1940 to General Aniline and Film, then an affiliate of I. G. Farben (exhibit 43).

In contrast to the alleged theoretical benefits which American companies claim accrue to this Nation by virtue of their foreign ties, these incidents show that in practice those advantages often did not materialize. Instead, our own research efforts were stifled and we became dangerously dependent on foreign research.

I. G. FARBEN KEEPS THE JASCO PROCESS EQUIPMENT A GERMAN SECRET

I. G. Farben also did its best to keep Standard Oil, and consequently the United States, entirely dependent on Germany for the most modern electrical equipment required by the acetylene arc process. When Jasco was being organized in 1930, I. G. Farben agreed with a large German equipment manufacturer, Brown Boveri & Co., that neither would reveal the trade secrets of the other, and I. G. Farben would buy its equipment from this company. Standard Oil accepted the obligations of this agreement, thereby making Jasco completely dependent on Germany for its electrical machinery. By agreeing "not to make available to any competitor of Brown Boveri any data or experience which, based on these tests, will be useful in the construction of an electric rectifier plant for the operation of direct current arc furnaces in gases," Standard Oil made Jasco dependent on Germany for replacement and repair parts as well as the original installation (exhibit 44).

The question of repairs did come up in November 1932, when Allis-Chalmers, an American associate of Brown Boveri, sought the Baton Rouge plant design "to be able later on to manufacture repair parts for this plant" (exhibit 45). Standard Oil inquired of I. G. Farben whether or not it could submit the design to this American electric company. Chemnyco, acting on behalf of I. G. Farben, turned down Standard Oil's request, even though it admitted that such an arrangement would be advantageous for the Baton Rouge plant, and despite the fact that this American company was connected with the Brown Boveri people. They rejected the idea on the ground that "there is less likelihood that Brown Boveri of Mannheim will import to competitors of ours the experience gained in conjunction with us than there would be in the case of Allis Chalmers, with which company neither Standard nor I. G. has so far had close business relations" (exhibit 45).

I. G. Farben endorsed the views of Chemnyco, stating that "such designs must under no circumstances be handed over to Allis-Chalmers" (exhibit 46). Its refusal to let Allis-Chalmers gain access to the plant design was not founded on its legal obligations under the Brown Boveri agreement, because that agreement was never ratified. In fact, less than a month after this refusal, I. G. Farben took the position that the "ratification of this agreement would at the present time offer no advantages to us and would only handicap our operations. In case of the use of rectifier apparatus for arc purposes, cooperation with other firms, in addition to B. B. C., would be desirable" (exhibit 47).

I. G. Farben then emphasized that the patent situation "is so confused that we do not wish to preclude further developments by assuming rigorous obligations in this field" (exhibit 47). The pact of secrecy between I. G. Farben and Brown Boveri, therefore, operated only to prevent American companies from gaining knowledge of the Jasco process and its equipment, but did not in any way limit I. G. Farben's activities in Germany.

Digitized by Google

With the complete shut-down of the Baton Rouge plant in 1935, the equipment question became academic. In September 1938, I. G. Farben once again approached Standard Oil with the proposal that Standard Oil enter a new restrictive agreement, along with I. G. Farben and Brown Boveri. An improved type of rectifier had been developed in Germany by I. G. Farben and Brown Boveri "which is held to be greatly superior to the old device on which the E plant (Baton Rouge) was run" (exhibit 48). Unfortunately, however, I. G. Farben and Brown Boveri could not find any patent basis in the United States for a restrictive agreement, and so they sought the aid of I. G. Farben's American junior partner. As I. G. Farben explained to Standard Oil:

"It was proposed to seek broad patent protection for the new combination, but the fact of the long existing knowledge of the electric arc oven and of its characteristics has proved to make the procuring of such protection difficult. I. G. has one pending United States application which will be obtained with rather narrow claims. The agreement is therefore drawn from the viewpoint that the details of the new rectifier should be kept secret as much as possible. This is believed to be particularly in the interest of Jasco, due to the limited protection afforded by the aforementioned United States application" (exhibit 48).

Standard Oil indicated that it had no objection to the proposed agreement provided it does not prevent "I. G. from supplying Jasco with such information as it may need for its own use of this equipment" (exhibit 49). In this way, Standard Oil let I. G. Farben maintain a strategic hold over the equipment necessary for the Jasco process, despite the fact that its patent situation in this country was admittedly weak. Standard Oil's acquiescence in this arrangement is particularly significant, in view of the fact that it had contributed half the cost of developing this improved type of rectifier (exhibit 50).

I. G. FARBEN PREVENTED THE PRODUCTION AT BATON ROUGE OF OTHER ACETYLENE PRODUCTS

The 1935 shut-down of the Baton Rouge plant was precipitated because the acetic-acid production tended to interfere with I. G. Farben's international relationships. However, since the process actually produced acetylene in the first instance, products other than acetic acid could have been made at Baton Rouge and I. G. Farben permitted such developments. From the very inception of the Baton Rouge enterprise, Standard Oil had attempted to get I. G. Farben's permission to produce acetylene products other than acetic acid. In fact, when Standard Oil first suggested that acetic acid be produced there, back in September 1931, it at the same time submitted the idea that the plant could be subsequently expanded to provide for the production of acetaldehyde resins, vinyl acetate, ethyl acetate, acetic acid anhydride, and monochlor acetic acid (exhibit 3). I. G. Farben responded to this proposal by informing its New York agent, Chemnyco, that with respect to these acetylene products, "we shall be very glad to give you a list of our American patents and to examine the question as to which of those products may be manufactured in America by Standard without affecting our export interests" (exhibit 51). As used by I. G. Farben, "export interests" referred to its international agreements with chemical companies all over the world and not literally to commodity exports.

As to any one of the chemicals suggested by Standard Oil, the existence of an international restrictive agreement to which I. G. Farben was a party would have precluded the possibility of Jasco's entrance into that field on an unrestricted basis. For example, with respect to monochlor acetic acid, which is one of the products referred to, I. G. Farben had this to say: "Monochlor acetic acid is of interest only with a simultaneous production of indigo and is being manufactured and used in the United States by Dow, du Pont, and Naco. Additional manufacture of monochlor acetic acid might bring new outsiders into the indigo field and might, therefore, affect our agreements in the dyestuff field in America (exhibit 3). It therefore concluded, and so informed Standard, that "In view of agreements existing between I. G. and the other members of the European dyestuffs cartel on the one hand and the three American firms manufacturing indigo on the other hand, ter Moor (I. G. Farben executive) feels that our process for the manufacture of monochlor acetic acid should not be brought into Jasco" (exhibit 52). United States patents covering I. G. Farben's monochlor acetic acid processes were therefore only a means of protecting I. G. Farben's cartel interests and helped prevent the development of competition not only in this kind of acid but also in dyestuffs.

Digitized by Google

This decision is in line with an earlier comment, made by Chemnyco to I. G. Farben in a letter of November 1931, with respect to the prospects for branching out at Baton Rouge beyond the manufacture of acetic acid.

"Only superficial discussions have been held with Standard about the manufacture of products other than acetic acid. In view of the complicated nature of the problem caused by the great variety of our interests we think it expedient to broach this question today. We had no thought of handing over to Standard technical details and important figures relating to the various processes * * *" (exhibit 53).

It is of considerable significance that I. G. Farben did not take Standard Oil into its confidence with respect to its "great variety" of interests, and for that reason did not discuss freely with Standard Oil the technical details and essential facts pertaining to the production of acetylene derivatives other than acetic acid.

Another illustration of how I. G. Farben viewed this partnership with Standard Oil is reflected by its reasoning with respect to butanol. It first decided that since the American market was glutted and there were large surpluses on hand, it was not an attractive export market from the viewpoint of I. G. Farben's German plants. Consequently, "from this angle there are no objections to taking up manufacture in the United States" (exhibit 3). That apparently took care of the export interests in the literal sense of the term, but there were other complications. I. G. Farben was disturbed by the fact that "the amicable relations between I. G., Union Carbide, and Chemical Solvents [two of the three largest butanol producers in the United States] might suffer therefrom, which in turn may result in a very disagreeable price war in European markets" (exhibit 3). I. G. Farben therefore concluded that "it is not in the interest of Standard and I. G. to go into the manufacture of synthetic butanol" as long as the market "suffers from the small consumption of this product by the automobile industry" (exhibit 3). There is no indication that Standard Oil's interest was at all considered, since the decision was based on the fact that entry into the butanol field might increase competition in I. G. Farben's markets. For similar reasons, I. G. Farben decided against the manufacture of acetone, which is fermented butanol, and which is an essential ingredient of explosives (exhibit 3). Thus, except for acetic acid, I. G. Farben turned down Standard Oil with respect to every other acetylene derivative.

Late in 1934, Standard Oil tried once more to induce I. G. Farben to permit Jasco to enter the production of acetylene products other than acetic acid. It argued at that time that "considerably greater profits can be realized by increasing the capacity" of the Baton Rouge acetylene plant "to twice its present size" (exhibit 32). Such expansion would require only a modest amount of additional investment, and "practically no additional labor will be required for the operation at twice present capacity" (exhibit 32). Standard Oil conceded to I. G. Farben that if all the additional acetylene capacity were converted into acetic acid "considerable disturbance of the acetic acid market may occur, since under these conditions we will be producing about 20 percent of the acetic acid sold in this country" (exhibit 32). Accordingly, Standard Oil suggested that inquiry be made "to see if other materials which can be made from acetylene may offer a more desirable outlet for the additional acetylene produced by doubling plant capacity" (exhibit 32).

This renewed request fared no better than the first. There was little likelihood that I. G. Farben would permit Jasco to make acetylene products by virtue of the fact that Union Carbide and Niacet manufactured and marketed many of these chemicals. The policy with respect to acetic acid was applied with equal vigor to all other acetylene products. For example, in March 1934, I. G. Farben opposed the sale of acetaldehyde, which was being manufactured at Baton Rouge as an intermediate product in the conversion of acetylene to acetic acid. Du Pont was interested in purchasing this chemical, but apparently I. G. Farben opposed such sale for some superficial reason. Shortly after this transaction was frustrated, Dr. Hochschwender in New York wrote to I. G. Farben's representative at Baton Rouge as follows: "I should like to advise you of our real reason for refusing to sell acetaldehyde to du Pont. The reason is that, at the moment, we do not wish to disturb the market by offering acetaldehyde" (exhibit 54).

I. G. Farben was fully appreciative of "Standard's desire to expand its plant as well as to find new outlets for the acetylene manufactured at such a low cost" (exhibit 55). It just happened that there were other considerations which I. G. Farben rated higher than its partnership with Standard Oil or the welfare of

Digitized by Google

Jasco. When I. G. Farben considered the possibilities of manufacturing at Baton Rouge vinylchloride, an important plastic material, it reasoned as follows:

"As a general principle the bringing of a process into Jasco has the result that all of our rights outside of Germany fall to Jasco and thereby are withdrawn from our direct influence. We cannot tolerate such a situation in view of the significance which we attach to the M. P. and P. C. materials. There is a possibility that products which we offer at the moment only for special purposes may, at some future time, become substitutes for celluloid. There is the probability that in view of the existing difficulties in world trade we may want to begin to manufacture those products in England, France, Italy, etc. It goes without saying that for this reason we must reserve full liberty of action for the I. G. and should not become dependent upon Jasco" (exhibit 55).

A leading I. G. Farben official also objected to granting permission to Jasco to manufacture this plastic chemical because the process might be a valuable pawn in I. G. Farben's negotiations with du Pont over synthetic rubber. He told his colleagues that "until such time as the synthetic rubber question will be clarified (the question being whether butadiene or Duprene is the better product) I want to reserve the field of vinylchloride, in the event that Duprene should prove to be the superior product. In that event du Pont would no longer be interested in an exchange of experience in the narrower field of synthetic rubber and we would have to have available another bargaining object in order to induce du Pont to license its German Duprene patents" (exhibit 55).

Manifestly the Jasco arrangement did not bring to this country any processes which I. G. Farben would not have otherwise brought here.

The market for acetylene products, such as vinylchloride, was so promising that even outsiders saw the possibilities of the Baton Rouge plant. Röhm & Haas, an American plastic company which already had friendly relations with I. G. Farben, inquired in August 1937 as to whether Jasco could supply it with the raw materials for vinylchloride (exhibit 56). I. G. Farben decided that "it would not be desirable to have Röhm & Haas began to manufacture this product because it is the basic material for artificial fabrics about which we are negotiating with du Pont at the moment (exhibit 56).

No matter what the chemical, I. G. Farben seemed to have already agreed with other chemical interests that it would not encourage its manufacture in the United States. Röhm & Haas also sought Jasco acetylene for the manufacture of cyanide products in 1937, but I. G. Farben had to refuse because it was already trying to negotiate du Pont into taking a license, and, secondly, it was a member of the world cartel on cyanide.

"It would be contrary to the spirit [of the cartel] for I. G. to lend its aid in putting up an additional cyanide plant. The American parties to this agreement, namely, American Cyanamid Company and duPont, will be very much interested in supplying a large consumer such as Rohm & Haas. The intended Baton Rouge plant could, therefore, be built only with the consent of these firms, which consent could probably be obtained only by making concessions concerning the cyannatrium quota" (exhibit 56).

How the corporate mind of I. G. Farben operates was clearly revealed when it had to decide, back in 1936, whether or not Standard Oil should be allowed to produce acetic anhydride. This chemical, which is a dehydrated form of acetic acid, is one of the most important chemicals made from acetylene. In response to an inquiry, Standard Oil informed the Western Cartridge Co. on January 30, 1936, that "we should be able to supply your needs of acetic anhydride at as low a price as anyone else. We have made some very rough estimates which would indicate that we could supply acetic anhydride at a price of 8 to 10¢ per pound at Baton Rouge for the scale now contemplated. With larger scale of operation, this price could undoubtedly be somewhat lowered. We are sending to Germany for additional information on acetic anhydride production and will be able to talk firmer figures in about three to four weeks" (exhibit 35).

The "production" information sought by Standard Oil in "Germany" was an inquiry addressed to I. G. Farben as to whether its prior commitments preclude the possibility of Standard Oil getting a license to make anhydride for Western Cartridge (exhibit 57).

I. G. Farben was in a predicament because it had no ready excuse for refusing such a license to Jasco, especially since the break-down of negotiations with Union Carbide a few months earlier. Negotiations were pending with Hercules Powder Co. for a nonexclusive license, but that would not have pre-

Digitized by Google

cluded the issuance of another nonexclusive license to Standard Oil. Rather than consent to Standard Oil's entry into this field and thus revive the Jasco plant, I. G. Farben remained silent and ignored the query.

Two months later, I. G. Farben was stirred to action when Hercules Powder also asked Standard Oil whether it could supply anhydride. Chemnyco, in New York, was informed of this request on March 31, 1936, and immediately cabled the information to Germany. The next day, April 1, I. G. Farben wrote to Dr. Hockschwender, setting forth their position:

"We must take into consideration our relations to various other American firms in determining whether we should assist Standard Oil in manufacturing acetic acid anhydride for the supply of Western Cartridge Company. Dr. ter Meer and the Patent Division agree with us that I. G. is not prohibited by any agreements from giving Standard a license under one of its processes for the manufacture of acetic acid anhydride. Acetic acid anhydride does not belong to the products wihch come within our agreement with U. C. C.; moreover, in the license agreement drafted with Hercules Powder, it has been stipulated only to give Hercules an option for a nonexclusive license" (exhibit 58).

Unable to find a real reason for refusing a license to Standard Oil, I. G. Farben then proceeded to weave an elaborate pattern of excuses for delaying the granting of a license. Disregarding the fact that Hercules did "not intend for the time being, to manufacture this product themselves," and ignoring the fact that Hercules was seeking anhydride from Standard Oil, I. G. Farben insisted on seeing Hercules as a potential objector to a Standard Oil license. They reasoned that since "acetic acid anhydride is used almost exclusively for the manufacture of acetyl cellulose and constitutes an essential cost item in the manufacture of this latter product, Hercules would probably regard it as very disturbing if we assisted Western Cartridge Company indirectly in taking up the manufacture of acetyl cellulose, by giving Standard a license under our acetic acid process. If we granted Standard such a license, Hercules might hesitate to sign the draft license agreement. Dr. ter Meer considers it as expedient, therefore—and we agree with him—to postpone answering Standard's inquiry until the license agreement with Hercules has been signed. In case there should be a delay in the execution of the license agreement, it would seem wise to tell Standard that we are not yet in a position to come to a decision in view of pending license agreements with other companies" (exhibit 58).

In the event that this delay should not prove sufficient to stop Standard Oil, I. G. Farben conjured up still another barrier. Even after Hercules signed the agreement and got its nonexclusive license, "Dr. ter Meer feels that business fairness demands that we advise Hercules about our plans in regard to Standard and continue conversations with Standard only provided that Hercules raises no serious objections" (exhibit 58). The sudden interest in "business fairness" is explained by the fact that "Dr. ter Meer feels that Hercules will object" and thus prove to be the means of stalling Standard. Thus was the full acquiescence of Hercules Powder twisted and tortured to make it appear to be an insuperable wall of relentless opposition.

I. G. Farben then proceeded to fortify the potential "objections" of Hercules with equally imaginary opposition from du Pont and Union Carbide. The letter to Hochschwender explained that du Pont had been asked if they were interested in I. G. Farben's anhydride process rights even before they were offered to Hercules Powder, but "after a relatively superficial examination, du Pont answered this question in the negative and said that they had no objection to I. G. licensing its patents in the United States" (exhibit 58).

Obviously I. G. Farben would never have offered them to Hercules unless that rejection by du Pont had been final and unqualified. But that did not stop I. G. Farben from continuing to use the situation against Standard Oil, as indicated by their next statement in the letter to Hochschwender:

"In case Hercules should not object, Dr. ter Meer thinks that another conference with du Pont should be held. Ter Meer feels that when du Pont said that they had no objection to our granting licenses to third parties in the field of acetylcellulose and acetic acid anhydride, du Pont did not have in mind that we would grant licenses not only to one but to several companies which had not theretofore been active in this field" (exhibit 58).

The extremes to which I. G. Farben was willing to go is illustrated by its reasoning as to why Union Carbide should be deemed as preventing the issuance of a license to Standard Oil. They wrote Hochschwender that "although we have no agreements with U. C. C. concerning acetic acid anhydride, U. C. C.

Digitized by Google

dominates the market at the moment and would probably regard it as very disagreeable if we enabled another customer of theirs to manufacture acetic acid anhydride itself" (exhibit 58).

After exhausting its supply of fictitious excuses for not giving its American partners a license, I. G. Farben concludes its letter to Hochschwender with an appropriately hypocritical assurance that "while we are no doubt interested in successful operation of the arc process developed in Jasco and while we should like to make it possible for Standard to exploit the pilot plant, we feel, nevertheless, that in view of the considerations mentioned above, reserve is necessary for the time being in regard to acetic acid anhydride" (exhibit 58).

This intricate planning and plotting reveals how adroitly I. G. Farben has used its many international ties and friendships to stymie American business, making it appear all the while that other American firms were at fault.

Subsequent events proved conclusively that none of the American companies were opposed to a Standard Oil license. In accordance with the procedure suggested in I. G. Farben's letter to Hochschwender, Hercules was informed that "Standard intends to sell acetic anhydride to other producers of cellulose acetate" and not merely to it alone (exhibit 59). But the reaction was not the one sought by I. G. Farben. Hercules not only failed to protest, but went further and asserted that they were "very much interested in working out any arrangement whereby we could feel that we were getting our acetic anhydride at a price which was no greater than that paid by our competitors for acetic anhydride of equal strength" (exhibit 69).

Unable to stimulate opposition among American companies, I. G. Farben finally gave Standard Oil formal notice that it was "prepared to grant a license to Standard under I. G.'s patents covering the production of acetic anhydride as described in U. S. P. 1,865,405, and to give any technical information they have in this field which may be useful for you" (exhibit 61).

This victory for Standard Oil, coming 5½ months after the original request, was more apparent than real. The letter of notification, which came from Chemnyco, concluded with a strong hint of indefinite postponement before Standard Oil could get under way:

"We are of course aware that, at this time, nothing definite can be arranged with Hercules Powder or any other possible customer, since the question of production costs of acetic anhydride has not sufficiently been cleared up. We have asked the I. G. some time ago to send us a detailed description of the process, including all figures that are necessary for a preliminary calculation, and shall forward it to you as soon as received" (exhibit 61).

These long delays plus the shut-down of the acetylene plant at Baton Rouge were apparently sufficient to crush Standard Oil's efforts to get into the anhydride field. The fact is that Standard Oil never did make acetic anhydride.

The question of anhydride manufacture by Standard Oil at Baton Rouge came up a year later, in June 1937, when du Pont was entertaining such an arrangement. The protracted and indeterminate idleness of the acetylene plant was sufficient to kill this project in its early stages. A Standard Oil official wrote on June 7, 1937, that "in view of the uncertainty regarding the future of the 'E' (acetylene) plant at Baton Rouge, we have not looked into this anhydride question further" (exhibit 62).

These case studies of the operations of an international business partnership with the American member as junior partner, show clearly that the United States always loses more than it gains from such an arrangement. I. G. Farben used its American patents to improve its world position, not to establish new industry in this country. Standard Oil was treated by it as a mere tool rather than as a partner, and this country suffered as a result because it prevented the natural expansion of that company's activities in the chemical field. The record shows that as a rule, Standard Oil was aware of the policies being pursued by I. G. Farben, and was willing to go along with it.

I. G. FARBEN WAS THE NAZI GOVERNMENT'S PROXY IN INTERNATIONAL TRADE

Judged from the viewpoint of business relations alone, such ties between American and foreign business interests are dangerous enough. When they reach over into the realm of government policy, they become even more menacing. In the case of I. G. Farben, it necessarily began to reflect German Government policy and strategy as soon as Hitler became the effective dictator of that country.

Standard Oil was amply warned of these developments as early as January 1934. At that time, during a conference in Germany, Standard Oil officials

Digitized by Google

were told that, with respect to the manufacture of acetylene products at Baton Rouge, there were two obstacles: (1) The departments of I. G. Farben producing those chemicals would have to be given full consideration, and (2) "another complication is the present policy of the German Government in requiring examination and approval of foreign contracts" (exhibit 63). This reference to the German Government's direct participation in all of I. G. Farben's foreign activities should have put Standard Oil on notice that its dealings with its German partner from then on would go far beyond the scope of private business. Thenceforth I. G. Farben decisions should have been regarded as German Government decisions, and since this was 1934 that meant Nazi decisions.

During periods of war and war preparedness, international business agreements of this type can be extremely harmful, if, as is the case here, one party operates as a direct agent of Government policy, while the other is actuated primarily by ordinary business incentives. This is especially true when the nations represented by the partners are potential enemies. That was the situation when war broke out in September 1939, and during the years immediately preceding. During that whole period Hitler was patently girding his nation for war and making it more and more obvious that a clash between his Germany and this country was inevitable. The I. G. Farben-Standard Oil partnership continued to operate through the years as though the situation since 1930 had remained substantially the same. From 1934 until 1941 Standard Oil had been able to do business with Hitler.

Upon formal declaration of war, the two partners did make some adjustments in their joint enterprises. In the chemical field, they had joint interests in a host of patents throughout the world and in the Jasco plants at Baton Rouge. They first settled the problem of the Baton Rouge plant.

Chemnyco cabled I. G. Farben on September 6, 1939, that Standard Oil and it had agreed to a plan whereby both partners would surrender to Jasco their notes against the plants and "authorize dismantling the plants for salvage" (exhibit 64). I. G. Farben approved the proposal by reply cable of September 9, 1939, authorizing Chemnyco to proceed with the transaction. Accordingly, on September 15, both Standard Oil and Chemnyco wrote to Jasco, in substantially the same language that "you have heretofore advised us that the 'D' and 'E' plants at Baton Rouge, Louisiana, are of no further use to your Company and should be abandoned as of August 31, 1939. We have discussed this question with I. G. Farbenindustrie and we and they agree that said Plants should be abandoned under the circumstances" (exhibit 65).

Jasco reported on November 22, 1939, to its two owners that the plan outlined in the letters of September 15 had been carried out. With respect to the dismantling, Jasco reported that the plan was that "Jasco would make the best deal that it could in connection with the dismantling of the 'D' and 'E' plants at Baton Rouge, Louisiana. This has been done and Jasco has received payment in the sum of $100,000 for its interest in the dismantled plants" (exhibit 66). There are numerous features of this unusual transaction which merit further scrutiny. Obviously, I. G. Farben and Standard Oil had to settle accounts for but one reason, the likelihood that the United States would be drawn into the war against Germany. In view of the fact that as early as 1934 the German Government was a direct participant in I. G. Farben's dealings with Standard Oil, there is no doubt that in this transaction, with Germany already at war, I. G. Farben reflected Nazi policy. Standard Oil, on its side, acted as a strictly private business corporation.

The plan of procedure was apparently settled in a few days' time. Considering the importance of acetylene to any war production program, it seems strange that so drastic a step as dismantling was decided upon without making certain that the plant could not be put to use. It is significant that Jasco was ordered to dismantle and not to make the best possible disposition of the facilities. In view of the fact that Standard Oil's own subsidiary, Standard Oil of Louisiana, was to buy the acetylene plant, the insistence on dismantling in the original plan is extremely disturbing. Under those circumstances, there could not have been any financial reason for so extreme a move.

Dismantling of the acetylene plant was of no special advantage to Standard Oil. But the German Government, through I. G. Farben, was undoubtedly anxious to facilitate the destruction of any plant in the United States which might be useful in war production. Such disposition of these, the only physical assets of Jasco, also brought the Germans some badly needed dollar exchange.

It is true that back in May of 1939 Standard Oil was already in agreement with I. G. Farben "that it is no longer necessary or desirable to maintain the

Digitized by Google

'E' plant intact, since it is extremely unlikely that it will ever be operated again" and that "it is probably impossible to salvage any appreciable part of the structure" (exhibit 67). Undoubtedly, the 4 years of idleness had resulted in some deterioration. In that connection, however, it is significant that on May 23, 1939, Standard Oil reported that I. G. Farben was "looking at the depreciation and maintenance expense" of the acetylene plant as one way of "saving all possible expenses which require the use of dollars" (exhibit 67). The plant, therefore, must have been maintained at least up to that time. In any event, no matter what the commercial prospects of the acetylene plant might have been late in 1939, the outbreak of war made it imperative to reappraise the plant with an eye to its possible utility in war production. As far as the records show, Jasco did not make such an appraisal.

Considering the importance of the step being taken, it is particularly surprising that in authorizing the dismantling, both Standard Oil and I. G. Farben stated in their letters of September 15 merely that they agreed the plants should be abandoned "under the circumstances." Nowhere is there an explanation of what circumstances the parties had in mind.

Another interesting feature of this transaction is the fact that though it was inaugurated subsequent to September 1 and was not concluded until December 1, 1939, it was effective as of August 31, 1939, the day before war was declared.

Whatever the ultimate judgment on this transaction may be, there can be no gainsaying the fact that Jasco was at that time as much under I. G. Farben's domination as it had been in prior years. Also, the letters of September 15 show on their face that abandonment of the plant was suggested by Jasco and agreed to by the partners. There is also no denying the fact that acetylene shortages developed in 1940 and 1941, requiring Niacet to actually curtail its acetic acid production at a time when demand was rapidly growing.

SHELL OIL INTERESTS OFFERED TO HELP GERMANY EVADE BLOCKADE

How the national welfare is endangered when international corporations continue to pursue their private business objectives in world markets during wartime is also illustrated by the activities of Dutch Shell interests. Their American chemical subsidiary, the Shell Chemical Co., obtained a license from I. G. Farben in August 1939 under United States patents covering the production of acetic, propionic, and formic acids by a process materially different from that used at Baton Rouge by Jasco. As was brought out earlier, the Shell people had considerable difficulty in getting this license because I. G. Farben insisted on prohibiting all exports of these chemicals from the United States not only by Shell but also by its customers.

Shell's final capitulation to I. G. Farben did not end their interest in exports. Being primarily an international corporation, Shell was obviously as anxious to engage in export trade as I. G. Farben, being also an international corporation, was anxious to prevent such activity. On September 15, 1939, while the Netherlands were still neutral in the war, Shell offered to supply acids to I. G. Farben's foreign customers. Chemnyco relayed Shell's offer to Germany, stating that Shell "suggests that if under prevailing conditions you are prevented from delivering formic acetic and propionic acid to certain foreign countries you give Shell Development temporary permission to sell these acids from the production of the pilot plant which Shell is erecting in California. Shell is aware that according to the license agreement they are not allowed to export the acids from the United States, but they believe that it might be in the interest of both parties if they would make deliveries to customers whom you cannot supply. Shell is especially interested in selling formic acid to the Dutch East Indies. Shell is prepared to have sales made through your representatives and to discontinue such exports as soon as you so desire. Please cable whether and to what extent you are prepared to comply with Shell's request. If you agree with the above, Shell will erect a larger pilot plant than originally contemplated" (exhibit 68).

I. G. Farben rejected the proposal on September 29, 1939, apparently feeling confident that British blockades would be ineffective (exhibit 69).

The rejection of its offer did not discourage Shell. On October 2, 1939, in reply to the notice of refusal, Shell wrote to Chemnyco that "we are still much convinced about the desirability of export of the acids under the present circumstances, and that, therefore, we should appreciate it if I. G. on their side would consider this suggestion again, should any new development put I. G. in a position to do so" (exhibit 70).

Digitized by Google

By February 1940 the Germans recognized that they were going to have considerable difficulty in supplying their foreign customers. Consequently, I. G. Farben reconsidered the Shell proposal and granted them permission to export formic acid on the following conditions:

"(1) no deliveries, either direct or indirect, to be made to Europe;

"(2) all exports to be discontinued at any time upon I. G.'s request;

"(3) that I. G.'s hitherto established prices and terms of delivery are not underbid, but if possible be increased.

"It is to be understood that you will be prepared to make deliveries to I. G.'s representatives in the respective countries but I. G. does not object to your doing business at the same time with other firms. In consideration of the export concessions for formic acid, I. G. believes that for the time this concession is to remain in force, a payment of 2½% in addition to the contractual royalty of 5½% would be justified; this addition, however, to be independent of minimum royalties set forth in the agreement referred to above and to apply only to deliveries to firms other than I. G.'s representatives" (exhibit 71).

Harsh as these terms were, Shell was quick to accept them. Immediately upon receipt of the German conditions, Shell replied that they "were pleased to see that the I. G. appears willing to consent to the export of formic acid under certain conditions" (exhibit 72). The only provision they opposed was the payment of extra royalties on sales made directly instead of through I. G. Farben agents.

By initiating this proposal and then accepting the terms laid down by I. G. Farben, Shell Chemical indicated that it was willing to maintain the foreign trade of I. G. Farben which the British blockade was trying to prevent. Obviously, Shell was actuated entirely by its own narrow business interests and gave no consideration whatever to the fact that it was aiding the German Government in its direct war against Britain and its indirect war against the United States. Apparently the fact that the Shell Chemical Co. was an American corporation and that the British had heavy investments in the parent Dutch Shell organization did not affect the international trade policies of the company.

Regardless of how the ordinary British, American, or Dutch citizen might characterize this deal, it did not involve any technical violation of law. Shell, as an international corporation, was quite naturally and quite legally grabbing every opportunity to expand its foreign trade, letting the political and military chips fall where they may.

Not until Germany actually invaded Dutch Shell's native country in May 1940 did Shell abrogate this agreement with I. G. Farben. On May 13, 1940, the day Queen Wilhelmina had to flee from the Netherlands and only two days before Holland finally capitulated, Shell wrote to Chemnyco that "because of the recent political developments, we are no longer in a position to discuss any arrangement as referred to in your letter of May 9th. We have not yet decided whether or not we shall erect a plant for the production of the acids in question" (exhibit 73).

Thus ended Shell's effort to help maintain Hitler's foreign markets. The question still left unanswered is what would have happened if Shell's country of incorporation happened to be an ally of Hitler or at least not a victim.

CONCLUSIONS

These case studies are not peak or extreme examples of how international corporations make use of United States patents. What I. G. Farben has done in the acetylene field it has undoubtedly repeated in every branch of industry in which it is interested. Also, its methods and policies have most likely been aped by other enemy corporations. On our side, the practices of Standard Oil and Shell are probably representative of the way international corporations in general have cooperated with foreign business interests in their manipulation of American patents. After all, the corporations involved rank very high in the world of business and their policies and practices have a profound influence on the methods of doing business adopted by others. These case studies can therefore be considered to be typical and as such they point to an alarming situation in the patent field the correction of which is essential if maximum war production is to be attained.

Unfortunately it does not seem likely that private business can clean house by itself. First of all there are probably many legal limitations which would

Digitized by Google

prevent them from doing a thorough job. Far more important is the fact that these international corporations seem oblivious of the political and military implications of their world-wide patent pools and understandings with foreign corporations. World trade never was a mere matter of business but the dangers inherent in neglecting its political and military aspects never were as great as they have been in recent years. The mechanization of war and the advent of Hitler with his barter diplomacy have intensified tremendously the need for giving primary attention to these features of foreign trade. I. G. Farben, for example, in recent years was first and foremost an instrumentality of Nazi political and military strategy and only secondarily a business enterprise. But our own international corporations seem to have disregarded these radical developments. Standard Oil knew as early as January 1934 that every foreign business move made by I. G. Farben had to be disclosed first to the Nazi Government and approved by them. That did not affect Standard Oil's performance under the 1929 partnership agreement even though it necessarily curtailed I. G. Farben's performance thereunder.

The attitude of the international corporation seems to be that as long as it is legal and good business, that is in the opinion of corporate management, then it is all right to enter into patent pools and friendly agreements with foreign corporations no matter what the latter's motive might be or how such a deal might affect the welfare of the United States as a political and military power. In defense of this position, businessmen argue that political and military matters are the province of government and that by taking such a view business is merely sticking to its own knitting. They are right in saying that government should deal with the nonbusiness matters, and that means direct government participation in international business. The political and military aspects of this branch of business has gained so much in relative importance during the past decade that the tradtional machinery for coping with this problem has been woefully inadequate.

With specific reference to the patent phase of international business, we must make certain that patents can no longer be used by foreign interests and their American friends as legal devices to attain illegal ends. Remedial machinery and legislation must be provided so that what I. G. Farben did in the acetylene field will not be repeated in the future. The Alien Property Custodian should be given all the legislative and other governmental assistance needed in order to go beyond "surface appearances," as Mr. Crowley put it, in determining who controls the utilization of certain patents. In modernizing the patent controls, it should be fully recognized that international patent pools, and even individual patent holdings, have been used extensively as a means of legally evading the antitrust laws. Merely preventing the doing of the wrong thing will not assure us of the maximum benefits which can be derived from these foreign held or controlled patents. Government must take affirmative steps to see that the processes covered by the patents are developed and utilized wherever it is advantageous to do so. If private business hesitates to take these positive measures, then, as Mr. Crowley suggests, Government must move in that direction.

Government must act with speed and thoroughness if it is to end the era when United States patents could be used by foreign interests to enhance their own international position, hinder production here, evade the antitrust laws, keep American producers out of export markets, thwart American research, get the benefits of our discoveries without fully reciprocating, and, finally, obstruct our war-production program. By recognizing that world trade, including international patent pools, are matters of public concerns, not plain, ordinary private business, the patent system of this country can be made to operate more effectively in the public interest than it has in recent years.

EXHIBIT No. 134

ZINC

Statement by Allen Dobey

At the present time this country is faced with a serious shortage of high-grade zinc. Long ago civilian consumption of high-grade zinc was drastically curtailed. Further curtailment is in store. War Production Board officials believe that there will be enough high-grade zinc for military purposes during 1942. The possibility of a more acute shortage in 1943 and beyond can only be eliminated by rapid expansion of our present facilities for the production of this vital commodity.

Digitized by Google

It is our purpose here to inquire into the possible causes for this shortage and to suggest remedial measures within the jurisdiction of this committee.

Zinc metal is of varying grades, depending primarily on the process of smelting or refiining employed and measured by the extent of the impurities remaining in the zinc metal. The purer the zinc metal, the greater is its malleability, ductility, and durability.

The different grades of zinc metal are special high grade, high grade, intermediate, brass special, and prime western. Special high-grade zinc is zinc metal at least 99.99 percent pure. High-grade zinc is metal at least 99.9 percent pure. Intermediate zinc is metal at least 99.5 percent pure. Brass special zinc is metal at least 99 percent pure, and prime western zinc is metal at least 98.4 percent pure. Prime western zinc is frequently referred to as common metal.

High-grade zinc (including special high grade) is used principally for die casting from zinc-base alloy and in the manufacture of brass. There is also a growing use of high-grade zinc for galvanizing.

High-grade zinc is a vital war material. Its principal military uses are in shell casings, small-arms ammunition, and die-casting parts for tanks and airplanes.

We believe that the documents we are presenting to this committee in connection with this presentation will show the following:

(1) The New Jersey Zinc Co., a New Jersey corporation, with its principal offices in New York City (hereinafter referred to as New Jersey) by means of patent controls has restricted and is restricting the production of high-grade zinc in this country.

(2) New Jersey has continually and over a long period of years pursued a policy of limiting the production of high-grade zinc in this country for the purpose of stabilizing the domestic market.

(3) New Jersey has prohibited its principal licensee in this conutry, the E. I. du Pont de Nemours & Co., from producing high-grade zinc and has required such licensee to sell one-half of the zinc produced by the licensed process as brass special or prime western zinc notwithstanding the fact that the zinc produced was actually of intermediate grade. As an alternative the licensee was required to debase the metal.

(4) New Jersey's patent licensing policy has been and is delaying the construction of additional high-grade zinc refining capacity in this country.

(5) New Jersey has discouraged the production of additional high-grade zinc by interested parties in order to preserve New Jersey's present position in the high-grade zinc industry after the war.

(6) Under the guise of patent controls New Jersey has erected its own private trade barriers throughout the world whereby New Jersey has agreed not to export high-grade zinc to the territories of its foreign licensees and New Jersey's foreign licencees have agreed not to export high-grade zinc produced by New Jersey processes to the United States or to the territories of other New Jersey licensees.

(7) While refusing to license the production of high-grade zinc in this country, New Jersey, in order to obtain the maximum revenue from royalties, has encouraged unlimited production of high-grade zinc by New Jersey processes in foreign countries, including Germany. As a result New Jersey has made a vital and substantial contribution to the German war machine.

It should be pointed out that we believe that most (but not all) of the policies which New Jersey has pursued for the purpose of restricting the production and sale of high-grade zinc in this country have been within New Jersey's legal rights. At the present time no antitrust action is under consideration or contemplated. We believe that the situation disclosed by the documents we are producing can only be remedied by legislation providing for compulsory licensing of United States patents owned by United States companies.

PROCESSES FOR REFINING ZINC

The oldest method still in use for the smelting or refining of zinc is the horizontal retort process. For many years this was the only pyrometallurgical method of smelting zinc. In this process the zinc ore concentrates are placed in horizontal retorts and subjected to distillation by heat, the zinc passing off in the form of vapor which upon cooling condenses into the zinc metal. This process produces zinc of a prime western grade unless subjected to special treatment, or redistillation. The horizontal retort process is not practicably or economically suitable for the production of high-grade zinc.

Digitized by Google

About 1928, New Jersey developed the "vertical retort" process for the production of high-grade zinc or near high-grade zinc. Shortly thereafter, patents on this process and apparatus appurtenant thereto were issued by the United States Patent Office to inventors employed by New Jersey and assigned by them to the company.

The vertical retort process, like the horizontal retort process, is a method of producing zinc metal by pyrometallurgy. This process has definite advantages over the horizontal retort process because of its capacity to refine high-grade zinc and also because of its capacity to refine larger quantities of zinc at less cost. The vertical retort process is sometimes referred to as the "continuous retort" process by reason of the fact that the process may be operated continuously, unlike the horizontal retort process whereby the zinc metal is smelted in batches.

About 1933 New Jersey developed the "fractionation" process for the refining of zinc metal of the highest grade. Zinc metal refined by this process averages 99.995 percent pure zinc. In 1935 patents on this process and apparatus appurtenant thereto were issued by the United States Patent Office to inventors employed by New Jersey and assigned by them to the company.

The fractionation process is a purification or rectification process as distinguished from a smelting process and is similar to the process used in the rectification of alcohol and the separation and cracking of petroleum. It is a supplemental process for the refining of zinc which has already been smelted and operates to purify zinc metal.

The invention is broadly characterized by subjecting the metal to be purified in vapor form to counter-current and intimate contact with refluxing molten metal formed by condensation of the vapor.

From the above it will be noted that the United States patents relating to both the vertical retort process and the fractionation process are owned by New Jersey. New Jersey has also obtained patents on these processes in the following foreign countries: Canada, Newfoundland, Mexico, Great Britain, Germany, France, French Morocco, Tunis, Spain, Norway, Poland, Czechoslovakia, Belgium, Belgian Congo, Holland, Luxemburg, Sweden, and Italy.

Aside from the vertical-retort process and the fractionation process, the only other process in general use for the production of high-grade zinc is the electrolytic process.[1] Under this method of refining the zinc ore concentrates are dissolved and the zinc is separated from the other elements in the solution by the action of electric current. The basic patents on this process have expired.

At the present time there are only four plants equipped with the electrolytic process in operation in the United States: The Anaconda Copper Mining Co. has plants at Great Falls, Mont., and Anaconda, Mont.; the Sullivan Mining Co. has a plant at Kellogg, Idaho; and the American Zinc Lead & Smelting Co. has a plant at East St. Louis, Ill., which was purchased from the Evans-Wallower Zinc Co. in September 1940.

Unlike the vertical-retort process or the fractionation process, the operation of the electrolytic process requires an abundance of hydroelectric power. The fractionation process can be used either with horizontal or vertical retorts for the refining of zinc metal of the highest grade, but the use of the electrolytic process requires the erection of a plant specially equipped for this purpose. The construction of an electrolytic-process plant consumes a longer period than that required for the construction and equipment of any other type of plant suitable for the production of high-grade zinc. The initial cost of the construction of an electrolytic-process plant is much greater than the initial cost of the construction of either a vertical-retort plant or a horizontal-retort plant equipped with fractionation.

DOMESTIC LICENSES OF NEW JERSEY

New Jersey has persistently refused to issue licenses in this country for the production of high-grade zinc under either the fractionation process or the vertical-retort process patents. Nevertheless, as will be noted more fully hereinafter, New Jersey has issued licenses freely under its foreign fractionation process and vertical-retort process patents, including licenses to German and Italian concerns for unlimited production.

[1] The St. Joseph Lead Co. has produced a very limited quantity of high-grade zinc by an electrothermic process.

Digitized by Google

The American Smelting & Refining Co. is New Jersey's only domestic licensee under the fractionation-process patents. This license limits production to a maximum output of 5,000 tons of high-grade zinc per year and arose out of unusual circumstances.

In 1934 inventors employed by New Jersey and inventors employed by the American Smelting & Refining Co., had interferences pending in the United States Patent Office in connection with applications for patents on the fractionation process. The applications filed by the inventors for New Jersey related to the fractionation process as applied to the purification of zinc metal only. One of the applications filed by the inventors of the American Smelting & Refining Co. related to the fractionation process as applied to the purification of metals generally. As a result of this interference, New Jersey and the American Smelting & Refining Co. arrived at a settlement agreement dated June 27, 1934 (exhibit 1) pursuant to which the American Smelting & Refining Co.'s inventors ceded priority in the interference to the inventors of New Jersey and pursuant to which New Jersey's inventors filed a new broad application relating to the fractionation process as applied to metals generally. Thereupon the applications of New Jersey's inventors, including the new broad application, were allowed on March 12, 1935, and the patents were assigned to New Jersey. In accordance with and pursuant to the settlement agreement of June 27, 1934, New Jersey then granted the American Smelting & Refining Co. an exclusive license to use the fractionation process for the purification of all metals other than zinc. As a further part of this settlement, the American Smelting & Refining Co. was given an additional license under the fractionation process patents which authorized the licensee to use the fractionation process for the refining of not more than 5,000 tons of slab zinc metal per year. The license further provided that the zinc metal refined by the fractionation process was to be sold only to Revere Copper & Brass, Inc., and the General Cable Corporation (both companies are subsidiaries of the American Smelting & Refining Co.), and the metal so produced and sold was to be used only by the purchasers in their own manufacturing operations. It was also provided that in the event the purchasers did not require the entire licensed output (5,000 tons per year) of the American Smelting & Refining Co., the balance of the high-grade zinc should be sold to New Jersey, if it so wished, or to a purchaser designated by New Jersey, at a price less than the metal would command in the open market.

It was further provided that in case the purchases by Revere Copper & Brass, Inc., and the General Cable Corporation did not consume the entire licensed output of American Smelting & Refining Co., the American Smelting & Refining Co. should have the option of selling the balance of the licensed output for export to any country in which at the time of export New Jersey had not granted a license under its foreign fractionation process patents. American Smelting & Refining Co. agreed to mark the zinc metal refined by the fractionation process as required by New Jersey in order to assist New Jersey in identifying the origin of the zinc metal and excluding it from entry into countries in which at the time of export New Jersey had licensed some one else under its foreign fractionation process patents.

It was futher provided in the license agreement that the American Smelting & Refining Co. should have the option to refine part or all of the 5,000 tons of high-grade zinc in Mexico instead of in the United States, in which event, however, the zinc was not to be exported to the United States or to any country in which at the time of export New Jersey had granted a license to another under its foreign fractionation process patents.

Thus the zinc license granted by New Jersey to American Smelting & Refining Co. under the fractionation process patents was circumscribed and limited in minute detail, so much so that it seems desirable for the sake of clarity to repeat the restrictions upon the licensee by quoting directly from the license from New Jersey to American Smelting & Refining Co. granted pursuant to the settlement agreement of June 27, 1934. I quote:

"The Zinc Company * * * hereby gives and grants to the A. S. & R. Company a nonexclusive license * * * for the purpose only of distilling or redistilling and refining or purifying in the United States not more than five thousand (5,000) tons of zinc in any one calendar year, the said five thousand (5,000) tons to constitute the maximum licensed output of the A. S. & R. Company in any calendar year, the said zinc to be sold only to Revere Copper and Brass, Inc., and/or General Cable Corporation, their successors or assigns, for use only by said pur-

Digitized by Google

chasers in their own manufacturing operations, provided, that in the event the purchases by the said purchasers do not require the entire licensed output of the A. S. & R. Company under this agreement, the balance of high-grade zinc so produced shall at the option of the Zinc Company be sold to the Zinc Company or to a purchaser designated by the Zinc Company at a price computed according to the following formula * * *. If within thirty days from the receipt by the Zinc Company of the notice from the A. S. & R. Company of the balance of zinc metal remaining on hand and available under the provisions of this clause, the Zinc Company shall not give the A. S. & R. Company disposal instructions for such balance of metal on hand, then the A. S. & R. Company shall have the right to sell such balance on the open market as it sees fit. The A. S. & R. Company shall have the option, in case the purchases by Revere Copper and Brass, Inc., and General Cable Corporation do not require the entire licensed production of the A. S. & R. Company under this agreement, of selling such balance for export to any country not included in the prohibited territtory referred to in clause 7 hereof."

Parenthetically it may be noted that clause 7 describes prohibited territory as any foreign territory in which New Jersey has granted a license to another under its foreign fractionation process patents.

Upon the execution of the settlement agreement of June 27, 1934, the American Smelting & Refining Co. proceeded to construct a fractionation process plant for the refining of high-grade zinc at Amarillo, Tex.

On September 12, 1940, New Jersey agreed to permit American Smelting & Refining Co. to produce not to exceed 6,000 tons of high-grade zinc for the current year 1940 and on April 14, 1941, New Jersey agreed to permit American Smelting & Refining Co. to produce not to exceed 7,000 tons of high-grade zinc for 1941. I quote from the correspondence in this connection (exhibit 2):

AMERICAN SMELTING AND REFINING COMPANY,
120 Broadway, New York, September 13, 1940.

Mr. M. L. HAVEY,
Vice President, the New Jersey Zinc Company,
160 Front Street, New York, N. Y.

DEAR MR. HAVEY: We acknowledge with thanks your letter of the 12th instant consenting to waive for the calendar year 1940 the limitation on our production of refined zinc under license agreement dated June 27, 1934, and we accept the conditions to which you refer, namely, that such production shall not exceed 6,000 tons during said year and that such waiver shall not constitute a precedent.

Your compliance with our request is greatly appreciated.

Very truly yours,
SHL.J S. H. LEVISON.

[Copy]

Office of the Vice President.

THE NEW JERSEY ZINC COMPANY,
160 Front Street, New York, April 14, 1941.

AMERICAN SMELTING AND REFINING COMPANY,
120 Broadway, New York, N. Y.
(Attention Mr. S. H. Levison, General Manager, Zinc Department.)

GENTLEMEN: Mr. Levison requested on the 10th instant that we waive for the calendar year 1941 the limitation on your production of refined zinc under license agreement dated June 27, 1934, so that your plant may be continued in full operation for the balance of this year. Mr. Levison estimated that total production for 1941 would not exceed 7,000 tons.

Under the existing conditions we are willing to and do hereby waive the said restriction on production for the calendar year 1941, with the limitation, however, that such production shall not exceed 7,000 tons and also that this waiver shall not be deemed to constitute a precedent for any further waiver in the future.

Will you please let us have your acknowledgment and acceptance of these conditions?

Very truly yours,

[Sgd.] M. L. HAVEY, *Vice President.*

Copies made for H. Y. Walker, K. C. Brownell, W. R. Boyle, E. J. Bruderlin, C. J. Roberts.
Orig. to L. K. Lacey.

Digitized by Google

S. H. LEVISON

AMERICAN SMELTING AND REFINING COMPANY,
120 Broadway, New York, April 15th, 1941.

THE NEW JERSEY ZINC COMPANY,
160 Front Street, New York, N. Y.
(Attention Mr. M. L. Havey, Vice President.)

GENTLEMEN: This will acknowledge your letter of April 14, 1941 in which you waive the restriction in our agreement of June 27, 1934 to the extent that we can produce up to 7,000 tons of refined zinc during the current year.

We agree, of course, that the production will not exceed the 7,000-ton figure during 1941 and recognize that your action is not to be deemed to constitute a precedent for any future waiver.

Very truly yours,

S. H. LEVISON.

SHL:S

B/C—L. K. Lacey, H. Y. Walker, K. C. Brownell, W. R. Boyle, E. J. Bruderlin, C. J. Roberts.

These waivers, of course, were subject to the original restrictions of the 1934 license upon the disposition of the zinc, that is, the metal was to be sold only to subsidiaries of the American Smelting & Refining Co. for use by such subsidiaries only in their own manufacturing operations, etc.

On September 23, 1940, the American Smelting & Refining Co. endeavored to procure a license from New Jersey under New Jersey's United States fractionation process patents for the construction of a high grade zinc refining unit at Beckemeyer, Ill. The American Smelting & Refining Co.'s request for the license was made by Mr. E. L. Newhouse, Jr., a vice president of the American Smelting & Refining Co. in charge of the federated metals division of the American Smelting & Refining Co. Mr. Newhouse's request is reported in an interoffice memorandum written by Mr. C. H. George, head of the patents division of New Jersey, dated September 23, 1940. I quote from Mr. George's memorandum (exhibit 3):

MEMORANDUM

SEPTEMBER 23, 1940.

Mr. E. L. Newhouse, Jr., President of Federated Metals Division of American Smelting and Refining Co., 120 Broadway, New York City, came in to see Mr. Hayes this morning. Mr. Hayes called me to his office and told me that Mr. Newhouse desired to have a license under our zinc refining processes; he asked me to discuss the matter with Mr. Newhouse in order to obtain the information necessary for us to determine whether there are any limitations in our previous commitments on the granting of such a license and to study the probable effect on our business if such license should be granted.

Mr. Newhouse told me that their plant at Beckemeyer, Illinois (in the St. Louis industrial district), is producing about 800 tons per month of Prime Western grade metal from drosses, skimmings, and other residues. He would like to have a license to build a refining plant of about the same capacity as the one at Amarillo—namely, about 5,000 tons per year. He wants to produce High Purity zinc, to be used in the manufacture of die-casting alloys of Zamak type, which Federated produces under license from us. At the present time their High Purity zinc is purchased from us (about 1,200 tons per year), the Anaconda Company, and St. Joseph Lead Company.

I asked Mr. Newhouse whether the production contemplated would supply their requirements of High Purity zinc for the production of these alloys, but he did not give a definite answer, claiming that he did not know and that furthermore it was impracticable to predict the future market for these alloys in view of the ever-increasing demand.

I asked Mr. Newhouse also whether his request was limited to a license for one unit of about 5,000 tons per year, or whether he contemplated eventlly refining the entire production of his Beckemeyer plant, which amounts to nearly 10,000 tons per year. He was not conclusive about this matter either, saying that at the moment his plans did not extend beyond one unit.

* * * * * * *

C. H. G.

CHG.JH

Digitized by Google

On September 24, 1940, New Jersey refused to grant the American Smelting & Refining Co. a license under the fractionation-process patents, as appears from an interoffice memorandum of that date written by Mr. George, head of New Jersey's patents division. I quote (exhibit 4):

MEMORANDUM

SEPTEMBER 24, 1940.

Mr. Havey and I called on Mr. Newhouse this afternoon and explained our position relative to his request yesterday for a license for a refining unit at his Beckemeyer, Illinois, plant. I told Mr. Newhouse that we had given his request our careful consideration and that it seemed certain to us that if we should grant his Company a license, we should receive requests promptly from other common metal producers for similar licenses, which we would find it difficult to refuse. I said we could not believe it would be to the interest of the Zinc Company to make these refining processes generally available to the industry at this time. I pointed out that over several years we have been besought by the common metal producers for such licenses—particularly following the news of the Amarillo plant, which exception, however, we were able to explain as surrounded by special circumstances; that our refusals have been accepted merely as being based on existing policy, so it seems certain that the news of a refining plant at Beckemeyer would be taken as indicating a change in our policy and that we should have to expect that requests for licenses to others would come along promptly. I explained to Mr. Newhouse that it was only with the greatest reluctance that we had come to a decision that precluded our complying with a request from him or his Company, but that we had not been able to reach any other conclusion.

Mr. Newhouse said he could easily understand our viewpoint. He proceeded to explore what seemed to him to be other possibilities. For instance, he asked whether we might not consider a refining unit at Beckemeyer as part of the arrangement for Amarillo, but I replied that our position had been too closely defined to permit of our making such an interpretation. A little later he proposed that we permit the AS&R Company to refine more metal at the Amarillo unit, but I said this also would entail the granting of a license on new terms, something which we were not in position to do. Some mention was made of the production of metal for export under draw-back, and Mr. Newhouse inquired whether that principle could be invoked for his benefit at Beckemeyer. Our answer was No, that in addition to violation of our policy against the granting of licenses in this country we would be in trouble with respect to our foreign-license agreements.

Mr. Newhouse asked whether, in vew of the present situation, we didn't think it might be patriotic on our part to grant licenses so as to facilitate the production of High Grade zinc. My reply was to the effect that, so far as I understood the situation, the greatest difficulty was in the production of common metal; that if the supply of common metal eased, with continuing shortage of High Grade, we had no reason to believe that we would not be able to supply the necessary facilities for the refining of sufficient common metal to supply the demand for High Grade.

Mr. Newhouse and Mr. Havey engaged in some general conversation in regard to the market situation, in the course of which Mr. Newhouse suggested that perhaps, not being able to get a license from us, they might be entitled to some extra consideration n allowance of metal supply for next year, their present contract calling for about 1,200 tons per year, all of which he said they take. Mr. Havey explained our policy on the allotment of metal and was careful to make no commitment as to any extra allowance for next year.

In the close of the conversation Mr. Newhouse thanked us for explaining our position so fully to him and said he was familiar with our policy of granting equal treatment to all; he asked that we inform him of any change in our licensing policy.

C. H. G.

CHG.JH

The American Smelting & Refining Co. has recently proceeded with the construction of an electrolytic plant for the production of high-grade zinc at Corpus Christi, Tex. This plant is not yet in operation. From an interoffice memorandum dated February 21, 1941, written by R. F. Goodwin, of the American Smelting & Refining Co., to H. Y. Walker, vice president of the American Smelting & Refining Co., it appears that the production of additional high-grade zinc would

Digitized by Google

have been greatly facilitated if the American Smelting & Refining Co. had been able to obtain a satisfactory license under New Jersey's fractionation process patents. I quote from this memorandum (exhibit 5):

FEBRUARY 21ST, 1941.

Memorandum to Mr. H. Y. WALKER,
Building:

Late yesterday afternoon, Mr. John Church, Chairman of the Non-Ferrous Metals Priority Committee of the O. P. M., called me by telephone from Washington. According to the telephone operator, he originally asked for Mr. K. C. Brownell, and, as Mr. Brownell was not in his office, the call was put on Mr. Boyle's line. When Mr. Church told Mr. Boyle that he wanted to talk about Buchans' zinc concentrates, the latter had the call switched to me.

Mr. Church, over the 'phone, said that he wanted to talk to me about our proposed new zinc plant, saying that it was his understanding that the reason that an electrolytic zinc plant was contemplated was that Buchans' concentrates were not particularly suitable for a retort plant, but that if he were wrong, and they were suitable for such a plant, then, in the interest of saving time in construction, he thought the new plant should be a retort plant equipped with fractionation.

I told him that he was talking to the wrong party, and that he should talk to you, in view of the fact that this new zinc plant was being handled by your department.

Mr. Church repeated to you the substance of his conversation with me, and your rely was to the effect that Buchans' concentrates were suitable for retort smelting, and that a retort plant with fractionation could probably be completed at a saving of 60 to 90 days, as compared to the time required for the construction of an electrolytic plant. You pointed out, however, that a license from the New Jersey Zinc Company would be required for a fractionation plant. Mr. Church then said you already have a license for such a plant at Amarillo, and you replied that this was good only for 5,000 tons of zinc per annum, or a little over 400 tons per month. Mr. Church then suggested that New Jersey Zinc would probably give a license for the 2,000-ton monthly capacity contemplated for the electrolytic plant, but you pointed out that we had had some negotiations with New Jersey Zinc some time ago for a license to cover a substantial monthly tonnage, but that it developed in view of licenses already granted in Great Britain and on the Continent, that there would be no place left to sell the zinc, except in a few unimportant countries of the world.

For this reason, the previous negotiations were dropped, and Mr. Church then said he understood that obviously such a license, if granted now for the tonnage under consideration, would be of no particular use after the present emergency was over.

The entire conversation was of a friendly and understanding nature, and Mr. Church did not imply that he would insist on a retort fractionation plant to cover the present emergency, regardless of the effect of the license complications on the future outcome of the plant.

He ended the conversation by stating that he now understood the situation, and implied that under all the circumstances an electrolytic plant would be desirable.

R. F. GOODWIN.

The American Smelting & Refining Co., with its limited license to produce 5,000 tons of high-grade zinc per year, is the only domestic licensee of New Jersey under the fractionation process patents. New Jersey has issued two licenses in this country under its vertical retort process patents.

On October 1, 1929, New Jersey, in consideration of stipulated royalties and other fees, licensed the Grasselli Chemical Co. under the vertical retort process patents, with the restriction that the licensee was to produce not to exceed 100 tons of slab zinc metal per day, of which not more than 50 tons was to be of intermediate grade and the remainder to be of a grade no better than brass special (exhibit 6). On October 2, 1929, New Jersey and Grasselli amended the license agreement to eliminate the restriction upon the amount of zinc that could be produced by the licensed process but the restriction that one-half of the metal produced was to be of a grade no better than intermediate and the remainder to be of a grade no better than brass special was retained.

The Grasselli Chemical Co. erected a vertical retort plant at Meadowbrook, W. Va. If New Jersey had permitted Grasselli to use New Jersey's patented lead eliminator in connection with the vertical retort process, Grasselli would

Digitized by Google

have been able to produce high-grade zinc at this plant (exhibit 7). Even without the lead eliminator, all of the zinc produced by Grasselli at Meadowbrook by the vertical retort process was approximately 99.7 percent pure, of intermediate grade.

To conform with the license restrictions, it would have been necessary for Grasselli to debase one-half of the zinc metal produced through the addition of lead after the molten metal emerged from the process. In order that the Grasselli Chemical Co. might avoid the expense of thus debasing one-half of the zinc metal, the Grasselli Chemical Co. and New Jersey entered into an agreement on May 20 ,1931, whereby New Jersey agreed that Grasselli was to sell one-half of the zinc produced by the process as intermediate zinc and the remainder produced by the process as brass special or prime western zinc, notwithstanding that all of the zinc was of intermediate grade. I quote from the correspondence on this matter (see exhibit 6):

[Copy]

THE GRASSELLI CHEMICAL COMPANY,
Cleveland, Ohio April 14, 1931.

Mr. F. N. SPENCER,
Vice President, New Jersey Zinc Company,
160 Front Street, New York, N. Y.

DEAR MR. SPENCER: As you know, the Spelter we have been producing at Meadowbrook on your vertical retort furnaces conforms closely to the following analysis:

Iron	.004 to .008
Lead	.10 to .20
Cadmium	.03 to .05

Our license agreement with your good selves provides that not more than one-half of the output may be intermediate grade of the following specification:

Zn	Minimum	99.50
Pb	Maximum	0.20
Fe	"	0.03
Cd	"	0.50
Pb+Fe+Cd	"	0.50
Al	"	0.00

and that the remainder shall be of a grade no better than Brass Special. We, of course, would like to avoid the trouble and expense of debasing any part of the output. On the other hand, we want to live up to the terms of the contract in every particular.

The bulk of our Spelter, as you know, goes to the galvanizing trade, and I do not believe it is competitive with high-grade.

While I do not like to bother you with matters of this kind, yet I shall appreciate it very much if you will kindly let me know whether or not there is any objection on your part to our producing and selling as Prime Western and Brass Special, metal conforming to the analysis mentioned in the first paragraph of this letter which, according to the contract, should be of a grade no better than Brass Special.

Awaiting your reply, and with kindest personal regards, believe me to be

Yours very truly,

[s] E. W. FURST, *Vice President.*

EWF:MC/L

[Copy]

MAY 20, 1931.

E. W. FURST,
Vice President, the Grasselli Chemical Company,
Cleveland, Ohio.

DEAR MR. FURST: Referring to your letter of April 14, 1931, and to conference held here April 22 at which you, Mr. Thompson, Mr. Hayes, and I were present:

We understand that the metal being produced on the vertical retort furnaces at Meadowbrook is all running better than Brass Special, whereas under the

Digitized by Google

terms and conditions of our license agreement, not more than fifty per cent of the output was to be Intermediate Grade. You expressed the desire to sell as Prime Western and Brass Special that proportion of the output which, according to the contract, should be of a grade no better than Brass Special, but which actually comes wtihin Intermediate limits. In other words, all the output now being of Intermediate Grade, you wish to sell one-half of it as Intermediate and the remaining half as Prime Western and Brass Special, even though this latter half analyzes as Intermediate and so is unlicensed under our agreement.

As we explained to you, we are reluctant to do anything which might adversely affect the position of our High Grade Horse Head Zinc, and that is the reason for the restriction in our license to you. On the other hand, we recognize thta conditions in the zinc industry at this time are most difficult, and we are desirous of doing anything we can to aid you in the operation of the new furnaces under these circumstances.

With this purpose and in these circumstances, we hereby waive, temporarily, the requirement in our license agreement that one-half of the output of the vertical retort furnaces shall not be better than Brass Special, as described in Section 4 of said agreement dated October 1, 1929. And we consent to your producing, while the said waiver is in effect, as your entire output, metal no purer than that specified in the analysis given in the first paragraph of your letter of April 14, 1931, on the understanding that you will sell not more than one-half of said metal as Intermediate Grade and the remainder as Prime Western and Brass Special. It is stipulated, however, that such waiver and consent shall be revocable by us at any time on thirty days notice and that in no event shall they extend beyond April 30, 1932, the full terms of the license agreement again becoming of full force and effect thereafter, except, that such revocation or termination of the waiver period shall not be deemed to have the effect of prohibiting the sale or delivery thereafter as Prime Western or Brass Special of metal produced during the waiver period.

Yours very truly,

[s] F. N. S., *Vice President.*

Frank N. Spencer/M.

On October 31, 1936, the Grasselli Chemical Co. assigned its rights under its license from New Jersey to E. I. du Pont de Nemours & Co., and E. I. du Pont de Nemours & Co. assumed all the obligations of Grasselli under the license agreement.

The procedure whereby du Pont, with the consent of New Jersey, sold one-half of the zinc produced at its vertical retort process plant at Meadowbrook as Brass Special or Prime Western zinc, notwithstanding that all of the zinc was of intermediate grade, was continued until some time in 1941, after the investigation in this case had been completed.

On July 9, 1930, New Jersey, in consideration of the transfer to it of a patent owned by the Hegeler Zinc Co., licensed the Hegeler Zinc Co. under the vertical retort process patents, with the restriction that the licensee was not to produce in excess of 50 tons of slab zinc metal per day, said zinc metal to contain not less than 0.5 percent total impurities, of intermediate grade (exhibit 8). By a supplementary agreement of the same date New Jersey licensed Hegeler under its vertical retort process patents to produce 750 tons per month of slab zinc metal to contain not less than 0.2 percent total impurities, of intermediate grade, said metal to be used only in the rolling mill plant of the licensee at Danville, Ill., and none of the metal to be sold as slab zinc but only as rolled metal (exhibit 9).

We have been advised that the Hegeler licenses have never been exercised. In any event, the licenses do not permit the licensee to produce high-grade zinc.

ANACONDA'S APPLICATION FOR A NEW JERSEY LICENSE

In October 1939 the Anaconda Copper Mining Co. requested New Jersey to grant Anaconda a license under New Jersey's fractionation process patents. The circumstances surrounding this request are set forth in a memorandum written by

Digitized by Google

Mr. C. H. George, head of the patents department of New Jersey, dated October 16, 1939. I quote (exhibit 10):

[Copy]

OCTOBER 16, 1939.

Mr. HENRY HARDENBERGH,
Vice President:

Mr. Laist, of the Anaconda Copper Mining Company, telephoned me last week and asked whether we would grant the Anaconda Company a license on our refining processes. He said he is finding it difficult to produce the grade of metal required by his sales department, due to the competition offered by Bunker Hill and ourselves in the die casting field and particularly to the propaganda being spread by Bunker Hill about the extreme purity of their metal. Anaconda's process was not intended, he said, to produce metal with such low leads, and he thought it might be cheaper to refine his product by our method rather than to make the changes or adopt the other expedients necessary to obtain the product required.

With the approval of yourself and Mr. Havey, I called on Mr. Laist this morning to discuss the matter further. He reviewed his position in considerable detail, and from what he said it appears that their product runs just a little under 99.99; he referred to it as 99.99%, or "a scant 99.99." Perhaps it would be a little easier to produce metal 99.97–8, but below that the efficiency of the process runs off. They can get the lead down to .004 at an excess cost of about $4.00 per ton, but beyond that the cost and the difficulties increase rapidly. He thought that to get the lead down to .002 would cost at least another $4.00, and when I asked him about getting down to .001, the figure necessary to equal Bunker Hill, he answered that he did not believe he could get down that low. To get these low leads apparently it is necessary to clean the cells and renew the anodes frequently, the frequence depending on the degree of purity sought. The solutions also must be kept very pure. The anode difficulties can be reduced by employing silver-lead anodes as proposed by Tainton, from whom Anaconda has a license, but while he talked a good bit about the use of such anodes, Mr. Laist did not say that he wanted to use them.

As an alternative Mr. Laist said there was considerable sentiment among his people for selling their product as it is produced normally, with a price differential under that for Special High Grade. He said that the premium of one cent over St. Louis gives them a net of only about $16.00 per ton after allowing for freight, whereas by debasing their metal to Intermediate and selling it on the St. Louis plus basis, they pick up about $7.00 a ton, so that there is a difference of only about $9.00 per ton in favor of the High Grade. He was careful to point out that they had made no decision to take any such action but said he merely wanted to indicate that it had been talked about a great deal among their people.

* * * * * * *

I asked Mr. Laist about the tonnages he has in mind for license, and he said Anaconda is selling from 2,000 to 3,000 tons of Special High Grade per month and that provision should be made also for the metal produced by Anaconda for United States Refining. * * * This would mean from 400 to 500 tons per month for U. S. Refining in addition to the 2,000 to 3,000 tons for Anaconda, or a total of 2,400 to 3,400 tons per month. * * *

* * * * * * *

I told Mr. Laist that we were desirous of rendering assistance to Anaconda in this matter if we could do so without materially injuring our own business. I mentioned that, of course, it would not do our business any good, to which statement he assented, but that I recognized that Anaconda could by one means or another produce the grade of metal demanded by its sales department. Obviously it would do us no good to make the task more difficult for Anaconda nor to increase its cost, *our principal interest being to avoid the production of additional High Purity zinc.* I indicated to him that in order to warrant us in asking for authority to grant such a license we would have to show sufficient advantage to the Zinc Company in the way of a royalty to justify such a departure from our policy. I said it was not very clear to me what such a royalty should be but that we would take the matter under consideration. Mr. Laist said he thought the total cost of the operation including royalty would be the

Digitized by Google

determining factor, and I undertook to give him an estimate of the probable cost based on the figures he gave me, together with our further views.

[s] C. G., *General Manager, Patents Department.*

CHG.JH
[Italics supplied.]
cc–Mr. M. L. Havey, Vice President.

New Jersey agreed to grant Anaconda a license under the fractionation process patents, as appears from a letter dated October 19, 1939, written by Mr. George of New Jersey to Anaconda. I quote (exhibit 11):

[Copy]

OCTOBER 19, 1939.

MR. FREDERICK LAIST,
General Metallurgical Manager,
Anaconda Copper Mining Company,
25 Broadway,
New York, N. Y.

DEAR MR. LAIST: Since our conversation last Monday I have consulted with our people about your request for a license on our refining process. As I understood your position you would like to consider the use of our process for the further purification of your product, now ranging from 99.97 to 99.99%, so as to give you a better competitive position, particularly in the die casting field.

* * * * * * *

We are prepared to grant to your Company a nonexclusive license under our United States patents relating to our zinc redistillation and refining processes for the production of not more than 30,000 tons (of 2,000 pounds each) of refined zinc metal per annum on the following general terms:

* * * * * * *

Grade of metal.—The Special High Grade metal now marketed by us ranges from 99.994 to 99.996% Zn, say, an average of 99.995%. We have been convinced as the result of extensive experimental work that metal of this analysis is eminently suitable for the manufacture of the die casting alloys now in general use and that the use of zinc of a higher degree of purity would not be of any advantage. Under present conditions we do not intend to engage in any market contest based on extreme purity of product and would expect your Company to join us in this policy and to keep its product within these limits.

* * * * * * *

Nonexport of product to territory licensed to others.—Your Company would undertake not to practice the licensed inventions except in the United States and perticularly not to export nor, so far as lies in its power, permit the export of the products of these inventions to any other country in which at the time we have licensed another with respect to these inventions. Upon taking a license your Company would be informed of the countries with respect to which licenses had already been granted, and from time to time thereafter it would be notified of any additional licenses issued. Your Company would undertake to comply with reasonable requirements from us as to the marking of the product of the inventions in such manner as would assist in identifying its origin and excluding it from entry into the prohibited territories.

General.—All agreements to which this Company is a party are subject to final approval by our Executive Committee. However, we express our willingness to recommend to our Executive committee for their acceptance the terms and conditions outlined in this letter (subject to the detailed terms and conditions of a formal agreement), providing we receive your acceptance of our offer within sixty days from this date. At the expiration of such period, unless further extended, our offer shall be considered as withdrawn.

Yours very truly,

[s.] C. G., *General Manager, Patents Department.*

C. H. George/JH
cc—Mr. Henry Hardenbergh, Mr. M. L. Havey.

As appears from a memorandum written by Mr. George of New Jersey dated October 20, 1939, one of the important considerations moving New Jersey to offer a license to Anaconda under the fractionation process patents was the

Digitized by Google

fear that Anaconda might sell its 99.99 metal at a differential under the special high grade zinc price. I quote from Mr. George's memordum (exhibit 12):

MEMORANDUM

OCTOBER 20, 1939.

* * * * * * *

* * * Mr. Laist indicated however, that he could get the lead down to a reasonable point by fractional condensation at a cost of about $4.00 per ton, but admitted that the yield would be only 50 percent. He pointed out also that by selling Special Intermediate metal at St. Louis at $3.00 premium over Prime Western, with $2.00 for Brass Special, he could pick up perhaps $7.00 in freight on delivery in the East as compared with a net of about $16.00 premium on High Grade, a difference of only $6.00 to $9.00 per ton. This leads to the most important consideration and that is that Anaconda might sell its 99.99 metal at a differential under the Special High Grade. Of course, this would probably lead eventually to adjustments by other producers also, with the result that in the end the relative position would be unchanged but with a lower level of prices all around.

* * * * * * *

C. H. G.

CHG.JH

From the foregoing documents it appears that in this instance New Jersey departed from its established policy of refusing licenses under its fractionation process patents for two reasons: (1) Anaconda was already producing high grade zinc by the electrolytic method, New Jersey's "principal interest being to avoid the production of additional high purity zinc," and (2) unless New Jersey offered the license Anaconda might sell its high grade zinc, slightly less pure than New Jersey's metal, at a differential under the established price for special high grade zinc.

Anaconda did not take a license from New Jersey under the fractionation process patents. We do not know the reasons for Anaconda's decision in this matter.

DOMESTIC APPLICATIONS

As already indicated, it has been the settled policy of New Jersey not to issue any domestic licenses under its fractionation process patents. The fractionation process inevitably produces zinc metal of the highest grade, regardless of the quality of the molten metal refined by the process. It has also been the settled policy of New Jersey not to grant domestic licenses under its vertical retort process patents for the production of high grade zinc.

Let us consider a few illustrations of New Jersey's domestic licensing policy with respect to both the fractionation process and the vertical retort process patents.

In May of 1930 New Jersey refused to license the Athletic Mining & Smelting Co., of Joplin, Mo., under the vertical retort process patents except upon the condition that the licensee's production by the licensed process should be of a quality no better than brass special and of limited tonnage. I quote from a letter written by Mr. George of New Jersey to Mr. Orr, president of the Athletic Mining & Smelting Co., dated May 26, 1930 (exhibit 13):

[Copy]

MAY 26, 1930.

Mr. CHARLES T. ORR,
President, Athletic Mining and Smelting Co.,
Joplin, Missouri.

DEAR SIR:

* * * * * * *

We wish to help stabilize the zinc industry and not to add to the demoralization already existing by indiscriminate licensing of our process. Our policy in this country, therefore, is to license only approved companies who are willing not only to explain their plans and disclose their standing in the industry to us but who we feel sure will handle the licenses to the best advantage of the zinc

Digitized by Google

industry as a whole. Also, we license the production only of metal of a quality not better than Brass Special and of limited tonnage.

* * * * * * *

Yours very truly,

[s.] C. G., *Manager, Patents Division.*

C. H. George/JH.

To members of the Antitrust Division, the term "approved companies" has come to have a well-defined meaning. To us it means an old established company in the industry, not a newcomer, and a company that believes firmly in the philosophy of limited production and price stability. It does not include a company that cuts prices.

In August of 1930 New Jersey refused to license the Constitution Mining & Milling Co., of Spokane, Wash., under its vertical retort process patents except upon the condition that the zinc metal produced by the licensed process contain no less than 0.5 percent total impurities, of intermediate grade, and be of limited tonnage (exhibit 14).

In June of 1936 New Jersey refused to license the American Metal Co. of New York City under New Jersey's fractionation process patents. I quote from an interoffice memorandum dated June 18, 1936, written by Mr. George of New Jersey (exhibit 15):

MEMORANDUM

JUNE 18, 1936.

Mr. Zimmer, of the American Metal Company, telephoned me this morning and asked about our policy relative to the zinc refining processes. I told him it was our policy not to grant license on these processes in this country. He said that had been his understanding, because he remembered that when we were talking about the vertical-retort process we had proposed to withhold license on the lead eliminator so that there would be no production of High Grade zinc. He said that, however, he had heard that a plant is being built at Armarillo by the American Smelting & Refining Company. I told him that was true but that that plant was limited in size and that the uses of its products were limited, also that the license was part of another arrangement. He indicated that he understood the circumstances and concluded the conversation by saying that "your policy, then, in this respect has not been changed," to which I answered in the affirmative.

C. H. G.

CHG.JH.

In August 1936 the American Zinc, Lead & Smelting Co., of St. Louis, Mo., sought to obtain a license from New Jersey under the vertical-retort process patents. By letter dated August 18, 1936 (exhibit 16), written by Mr. C. H. George, head of the Patents Department of New Jersey, to M. H. I. Young, president of the American Zinc, Lead & Smelting Co., New Jersey offered to license the American Zinc, Lead & Smelting Co. under the vertical-retort process patents for the production of approximately 75 tons of zinc metal per day on the condition that the zinc metal produced by the licensed process should be of a grade no better than brass special, and upon further condition that the licensee would not export zinc metal produced by the process to any other country in which at the time of export New Jersey had licensed another under corresponding foreign vertical-retort process patents.

On September 2, 1936, Mr. Young, of American Zinc, Lead & Smelting Co., wrote Mr. George, of New Jersey, and specifically inquired as to the grade of metal he would be authorized to produce under the contemplated license from New Jersey. I quote (exhibit 17):

AMERICAN ZINC, LEAD AND SMELTING COMPANY,
Mascot, Tennessee, September 2, 1936.

Mr. C. H. GEORGE,
General Manager, Patents Department, New Jersey Zinc Company,
160 Front Street, New York, N. Y.

DEAR MR. GEORGE:

* * * * * * *

* * * If we adopt the use of your process, we would, of course, prefer to produce all of our metal by same. It is my understanding, however, that if we

Digitized by Google

wish to produce the grades above Brass Special it will be necessary to produce by some method other than yours. I shall appreciate your advising me whether my understanding is correct.

* * * * * * *

Very truly yours,

[s.] H. I. YOUNG, *President.*

HIY: C.

Mr. George replied to this letter by telegram dated September 9, 1936, as follows (exhibit 18):

Date: Sept. 9, 1936. Time: 11:00 A. M.

To: H. I. YOUNG,
President, American Zinc, Lead & Smelting Co.,
943 Paul Brown Building, St. Louis, Mo.:

Reference your letter second instant and our acknowledgment fourth Stop In view of possible effect on our own business of increased production of grades above Brass Metal we are not willing to license such production by our vertical-retort process Stop Limitation in proposal contained in our letter of August eighteenth therefore remains unchanged.

THE NEW JERSEY ZINC COMPANY.

C. H. George/JH.

By letter dated September 10, 1936, Mr. Young of American Zinc, Lead & Smelting Co. again wrote Mr. George of New Jersey requesting reconsideration by New Jersey of New Jersey's requirement that the metal produced under the proposed vertical retort process patents license be of a grade no better than brass special. I quote from Mr. Young's letter of this date (exhibit 19):

AMERICAN ZINC, LEAD AND SMELTING COMPANY,
St. Louis, Missouri, *September 10, 1936.*

Via Air Mail

Mr. C. H. GEORGE,
General Manager, Patent Department, The New Jersey Zinc Company,
160 Front Street, New York, N. Y.

DEAR MR. GEORGE:

* * * * * * *

I should like for you to give further consideration to the decision you have arrived at in connection with the grade of metal. We shall be using in our plant by any process we use ores that on account of their purity produce metal of Intermediate grade. This metal has been going onto the market for a number of years, and we have customers that depend upon us for this supply. We cannot afford to take the metal and debase it, which will be necessary if we meet the guaranteed specifications you are insisting upon. We should like for you to give further consideration to permitting us to make all grades from Prime Western up to and including Special Intermediate, limiting us to a maximum annual production of grades better than Brass Special of 10,000 tons.

We are very much interested in the use of your process, and if we spend in excess of $1,000,000 for this installation, we would naturally expect to discontinue the operation of all our present type of retorts.

* * * * * * *

Very truly yours,

[S.] H. I. YOUNG, *President.*

HIY:MR

New Jersey refused to reconsider the matter, as appears from an interoffice memorandum written by Mr. George, of New Jersey, dated September 17, 1936. I quote (exhibit 20):

MEMORANDUM

SEPTEMBER 17, 1936.

Mr. Young came in yesterday afternoon as proposed in his letter of September 10. He said he wanted to ascertain whether our restriction to Brass Special grade of any metal produced in his proposed vertical retort plant would extend to a requirement that the metal product be degraded if it should be better than Brass Special. I told him that we would require that no metal better than Brass Special be produced or sold, even though it should be necessary to degrade the

Digitized by Google

product. I explained to him that while he might be able, as he said, to produce Intermediate metal by the horizontal retort method from the ore he proposes to use in the vertical retort plant, nevertheless we would not care to license under our patents the production of the higher grades of metal.

* * * * * * *

Mr. Young asked that I let him know if we find it possible to change our position with regard to the restriction on the grade of metal to be produced.

C. H. G.

CHG.JH

American Zinc, Lead & Smelting Co. declined the license on these terms. I quote from a letter written by Mr. Young to Mr. George dated January 8, 1937 (exhibit 21):

AMERICAN ZINC, LEAD AND SMELTING COMPANY,
St. Louis, Missouri, January 8, 1937.

Mr. C. H. GEORGE,
General Manager, Patents Dept., The New Jersey Zinc Company,
160 Front Street, New York, N. Y.

DEAR MR. GEORGE: We have given careful consideration to the use of your continuous retort at East St. Louis, and inasmuch as we would not be permitted under your license to make metal better than Brass Special grade, we find it will be impossible for us to consider this type of equipment.

If at any time within the next year your policy as to grade is changed, I shall appreciate your advising me.

* * * * * * *

Very truly yours,

[S.] H. I. YOUNG, *President.*

HIY:JT

On August 27, 1937, Mr. Young wrote Mr. George inquiring whether there had been any change in New Jersey's policy with respect to granting licenses under its vertical retort process patents.

By letter dated August 31, 1937, Mr. George replied as follows (exhibit 22):

[Copy]

AUGUST 31, 1937.

Mr. H. I. YOUNG,
President, American Zinc, Lead and Smelting Co.,
943 Paul Brown Building, St. Louis, Missouri.

MY DEAR MR. YOUNG: I have your letter of August 27, 1937, inquiring as to whether our policy with respect to the licensing of our vertical retort smelting process has been changed since your inquiry last year.

It is still our policy not to license this process in this country for the production of slab zinc of a grade better than Brass Special.

Yours very truly,

[s.] C. G., *General Manager, Patents Department.*

C. H. George/JH

In September 1938 Mr. Young appears to have again taken up the matter of a vertical retort license with New Jersey. An interoffice memorandum written by Mr. George dated September 16, 1938, reads as follows (exhibit 23):

MEMORANDUM

SEPTEMBER 16, 1938.

When Mr. Young and Mr. Seymour were here yesterday, I mentioned to Mr. Young that I would be glad to discuss with him the licensing of his Company with respect to our vertical retort smelting process on the basis of a production of fifty percent Intermediate and fifty percent Brass Special. Mr. Young said he was definitely interested and would like to confer with his people and then discuss the matter further with me when he is here during the last week of the month.

I pointed out to Mr. Young that such a license agreement would contain a restriction also on the exportation of the product of the vertical retort plant to any other licensed territory. I told him also that the royalty would be $3.00 per ton instead of $2.50 as quoted him before. I explained our reasons

Digitized by Google

for the change, particularly the improvement in the process both as to performance and economies, and the shortening of our patent period.

C. H. G.

CHG.JH

Apparently Mr. Young was still negotiating for a license from New Jersey in August 1939, as appears from exhibit 24 attached.

On July 24, 1940, Mr. Young was still negotiating with New Jersey, as appears from a letter of this date written by Mr. Young to Mr. Hardenburgh, vice president of New Jersey. I quote (exhibit 25):

ST. LOUIS, MISSOURI, *July 24, 1940.*

Mr. HENRY HARDENBURGH,
Executive Vice President, The New Jersey Zinc Company,
160 Front Street, New York, New York.

DEAR HENRY: I would appreciate your dropping me a note, at your convenience during the next week or ten days, advising of the best grade of metal you will permit us to produce and sell in the domestic market under license agreement covering the use of your continuous retort.

I know you restrict production of 99.99%, but would you like to know whether you will permit the production and sale of zinc covering the A. S. T. M. specifications of high-grade, which is 99.9% to 99.95%.

* * * * * * *

Very truly yours,

——— ———, *President.*

HIY: LJ

Mr. Hardenburgh replied to Mr. Young by letter of August 6, 1940, as follows (exhibit 26):

THE NEW JERSEY ZINC COMPANY,
August 6, 1940.

Mr. HOWARD I. YOUNG,
President, American Zinc, Lead and Smelting Company,
943 Paul Brown Building, St. Louis, Missouri.

DEAR MR. YOUNG: Your letter of July 24th having to do with the possibilities of producing various grades of slab zinc in our vertical retorts has raised a new question which is somewhat disturbing. Before making any formal reply to your inquiry I think it might be well if you and I could sit down together and discuss just what you have in mind in this connection.

If you will let me know when you next expect to be in New York, I will hold myself available.

Very truly yours,

[S.] HENRY HARDENBERGH, *Vice President.*

Henry Hardenbergh/O.

We do not know what happened at the meeting between Mr. Young and Mr Hardenbergh. We would be very much surprised to find that New Jersey offered Mr. Young a license which would permit him to produce high-grade zinc under New Jersey patents. Such an offer would be contrary to New Jersey's frequently announced policy. In September 1940 Mr. Young's company, the American Zinc, Lead & Smelting Co., purchased the old Evans-Wallower zinc plant at East St. Louis, Ill. and we understand that this plant is now producing high-grade zinc by the electrolytic method.

In June 1936 New Jersey refused to grant a license for the production of high-grade zinc by the vertical retort process to the St. Louis Smelting & Refining Co. of St. Louis, Mo. An interoffice memorandum written by Mr. George, of New Jersey, dated June 29, 1936, reads as follows (exhibit 27):

MEMORANDUM

JUNE 29, 1936.

On June 23, 1936, Mr. J. A. Caselton, Second Vice President and Secretary of the St. Louis Smelting & Refining Company (a subsidiary of the National Lead Company), 722 Chestnut Street, St. Louis, Mo., called on Mr. Spencer to discuss the possibility of obtaining a license for their affiliated company, the Combined Metals Reduction Company, with respect to the vertical retort furnace. He said they were considering what should be done with the ore from their properties in Nevada in the Pioche-Comet Districts and wanted to include the vertical retort process in their considerations. It is proposed to build a plant in Utah,

Digitized by Google

apparently in the Salt Lake Valley (where it is probable that natural gas from the Wyoming fields is available). * * * Mr. Spencer told Mr. Caselton that we do not grant licenses in this country for the production of High Grade zinc, but Mr. Caselton, while indicating that they desired to make High Grade zinc, suggested that he would like to have some information about the process anyway. Mr. Spencer brought him down to me and asked me to take care of the inquiry. * * *

* * * After consultation with Mr. Hayes, Mr. Spencer directed me to call on Mr. Carter, President of the National Lead Company, and discuss this matter with him. I went over to see Mr. Carter on June 24 and explained the situation to him. I first took occasion to express on behalf of Mr. Hayes regret that we found ourselves unable to cooperate fully with the National Lead Company in that we could not consistently grant that Company a license under our process to produce High Grade zinc because of the effect on our own High Grade zinc business. I told him that there was already too much production and that it would not be consistent for us to add to our own difficulties by being a party to the bringing in of new production by another. I remarked that Mr. Caselton had said that the withholding by us of a license to them on the vertical retort furnace would not necessarily keep them out of the High Grade zinc business, as they might adopt the electrolytic method; the answer was, of course, that while that might be true, we had been under pressure for a long time from other producers for such licenses, and we could not hope to make them understand the difference between granting a license to a newcomer and the granting of licenses to established smelters. Mr. Carter indicated his acquiescence in that point of view.

* * * I cited Mr. Spencer's statement to Mr. Caselton that we could not license the production of High Grade zinc and suggested that it might well be that such a limitation would have the effect of eliminating our process from consideration. * * *

Mr. Caselton said that there did not appear to be much attraction for anyone to go into the High Grade zinc business if the industry is already overproducing. He said he had understood sometime ago through Mr. Doehler, who is a member of their Board, that there was a shortage of High Grade zinc and that Mr. Doehler had been experiencing some difficulty in securing adequate supplies for his die casting business. I told Mr. Carter that that condition had passed, that the shortage had been more apparent than real, and that it seemed a good many of the consumers had overbought their positions. I pointed out to him that the situation now is relatively easy and that the market is off five points. * * *

* * * * * * * *

C. H. G.

CHG.JH

In February 1941 the National Lead Co. of St. Louis, Mo., endeavored to obtain a license for the production of high-grade zinc by New Jersey's fractionation process. It will be recalled that the National Lead Co. is the parent corporation of the St. Louis Smelting & Refining Co., which company in 1936 had unsuccessfully sought a license from New Jersey for the production of high-grade zinc by the vertical retort process. The National Lead Co. was no more successful in obtaining a license from New Jersey for the production of high-grade zinc in 1941 than its subsidiary had been in 1936. New Jersey not only refused a license to the National Lead Co. but endeavored to discourage the National Lead Co. from producing high-grade zinc by any process. I quote from an interoffice memorandum written by Mr. George, head of New Jersey's patent department, on February 20, 1941 (exhibit 28):

MEMORANDUM

FEBRUARY 20, 1941.

By appointment, Mr. Paul brought in this afternoon Mr. Jean McCallum of the National Lead Company, St. Louis, who had expressed interest in our refining processes. Mr. McCallum opened the discussion by inquiring whether it would be possible to arrange for the refinement by our methods of Prime Western zinc. I replied by inquiring whether the Prime Western zinc he had in mind was metal already available or would come from new production. Mr. McCallum was not inclined to give a direct answer to the question, indicating that it might be either or both. I told him that the answer would be different in the

Digitized by Google

two cases. I explained that it is our policy not to grant licenses in this country with respect to these refining processes, although we had granted a limited license to the American Smelting and Refining Company for one unit with paid-up consideration as a part of the settlement of a patent dispute. I told him further that so far as our refining metal for someone else is concerned, we would have to give first attention to the requirements of the Government under the present emergency. I indicated that the Government already has our refining capacity under its consideration and that, of course, we must meet its requirements either from our existing active capacity, our reserve capacity or from new capacity to be created. I told him I thought there would not be much chance under present conditions of having metal refined except at the behest of the Government. I pointed out to Mr. McCallum that so far as new production would be concerned I did not believe the spread in price of one cent between High Grade and common metal would be sufficient, after allowing perhaps half for freight and other expense, to pay for the cost of refining and leave enough profit for division between two parties. He seemed to be inclined to agree with this view.

In further discussion Mr. McCallum remarked that they had had under consideration for a good many years the construction of an electrolytic plant in Nevada, probably near Las Vegas, where advantage could be taken of Boulder Dam power, for the treatment of ore from their Pioche District. He said that for some years they had been producing ore in that District and selling it all to the Anaconda Company. He seemed to think it would be necessary for them to produce High Grade zinc in order to make the project commercially practicable. I mentioned briefly my conversation in 1936 with Mr. Caselton on this same subject. I referred to the urge for production of zinc in the world under present conditions and the expanded capacity for production being created, and expressed the opinion that when the present emergency is over the zinc industry will be in for a period of severe adjustment. I mentioned particularly the effect on the applications of High Grade zinc of the efforts now being made to divert zinc from these uses with the substitution of other materials and expressed the opinion that it will take a long time to regain the lost markets. Mr. McCallum said these were among the considerations that had caused them to hesitate but that he was exploring the situation. He said I had given him all the information he required for his present purposes but that he would get into communication with us again if he found he needed anything additional.

C. H. G.

CHG.JH

In May 1937 New Jersey refused to license the United States Steel Corporation under the fractionation process patents. I quote from an interoffice memorandum written on May 12, 1937, by Mr. George, head of New Jersey's patents division (exhibit 29):

MEMORANDUM

MAY 12, 1937.

Mr. Queneau came in today and inquired of me as to whether we would grant to the United States Steel Corporation a license with respect to our zinc refining processes for a production of 12,000 tons per year. Mr. Queneau referred to the development of their new galvanizing process which utilizes high purity zinc and said that he would be willing to engage that the entire production of refined zinc should be used by the American Steel & Wire Company and other subsidiaries of the Corporation and none sold in the market. He indicated that such a plant would be located at Donora, where he said they now have a capacity of 72,000 net tons of common metal per year. * * *

Earlier in the conversation Mr. Queneau had been complimentary in his references to the fulfillment by the Zinc Company of its obligations with respect to delivery and price, not only *during the recent shortage of metal*, but at the beginning of the War. He recalled that Mr. Farrell, then President, had mentioned that the Zinc Company was one of the few companies that had lived up to their contract obligations with respect to both deliveries and price.

I reported the substance of the conversation to Mr. Spencer, and a little later he directed me to tell Mr. Queneau that it is our policy not to grant licenses in this country with respect to these refining processes because of the effect on our own business. He said I should say to Mr. Queneau, however, that we are ready to enter into a contract with the Corporation to supply it with the 12,000 tons of high purity zinc estimated as its requirements for next year. He

Digitized by Google

said we would be willing even to enter into a contract for the following year also if that were desired.

C. H. G.

CHG.JH
[Italics supplied.]

The Minerals Yearbook (published by the Bureau of Mines) tells us that "the recent shortage of metal" referred to in this memorandum of May 12, 1937, was attributable to a power shortage in Montana. As a result of the power shortage the Anaconda Copper Mining Co. was forced to close its electrolytic plants at Great Falls and Anaconda, Mont. during the months of January and February 1937 and was forced to operate these plants at reduced capacity for a considerable period of time. The resulting shortage of zinc that existed was particularly a high-grade zinc shortage, and foreign metal was imported in large quantities to meet domestic needs. Thus on June 18, 1937, the Societe Generale des Minerais of Brussels, Belgium, wrote New Jersey as follows (exhibit 30):

SOCIETE GENERALE DES MINERAIS, SOCIETE ANONYME,
June 18, 1937.

THE NEW JERSEY ZINC COMPANY,
160 Front Street, New York.

(Attention Mr. George, General Manager Patents Division.)

99.99% ZINC

DEAR SIRS: We have learnt through the commercial data which we receive from America that there is a considerable shortage of Fine Zinc in the U. S. A. and that moreover some quantities of European Electrolytic zinc have been sold in U. S. A.

We are therefore taking the liberty, in the event that this is useful and agreeable to you, of placing at your disposal a certain tonnage of 99.99 Zinc for import into the U. S. A.

* * * * * * *

Yours very truly,

SOCIETE GENERALE DES MINERAIS, SOCIETE ANONYME.

The point we wish to bring out here is simply this: In 1937 a shortage of hydroelectric power resulted in an acute shortage of high-grade zinc in this country, even in normal times. Today the demand for hydroelectric power is greater than ever before. Today the demand for high-grade zinc is greater than ever before. It is impossible to alleviate the present shortage of high-grade zinc by the importation of metal from Europe, as was done in 1937. Indeed, we must now export high-grade zinc to England, Russia, and China. Clearly, expanded facilities for the production of high-grade zinc should embody the New Jersey processes which do not require hydroelectric power and not the electrolytic process which is dependent upon an abundance of hydroelectric power. In addition, as already pointed out, plants embodying New Jersey processes can be built in less time and at less cost than electrolytic plants.

On August 22, 1940, New Jersey offered to license the United States Steel Corporation under the vertical retort process patents, subject, however, to the restriction that all of the metal produced by the licensed process should be used by the licensee or its subsidiaries in their own manufacturing operations, and none of the metal should be sold in the open market. New Jersey proposed to restrict the use of the metal to the licensee's own manufacturing operations, notwithstanding the fact that New Jersey was in doubt as to whether such a restriction was legal. Thus an interoffice memorandum written by Mr. George, of New Jersey, dated July 26, 1940, reads as follows (exhibit 31):

JULY 26, 1940.

Mr. HENRY HARDENBERGH,
Vice President:

We have here two questions:

1. May we properly limit the license to the production of slab zinc for use only in the operations of the licensee, none to be offered for sale to others?

Digitized by Google

Mr. Davis thinks we may do so. Mr. Wing thinks we may not, but he believes we may properly limit the grant to a specified maximum tonnage.

Following the suggestion by Mr. Wing in the last paragraph of his letter, I suggest that we introduce into the preamble of the license agreement a clause reading as follows:

> "Whereas, the Licensee desires to utilize the process and apparatus embracing the said inventions for the production of slab zinc for use in its own manufacturing business, its requirements for such purposes being estimated at 73,000 tons per annum, and."

I think we should then show in the granting clause that the license is "for the production of slab zinc for use only in the operations of the licensee, none to be offered for sale to others." We have the advice of eminent patent counsel, Mr. Davis, that such a limitation would be in accordance with the law as confirmed by the Supreme Court. The prospective licensee, so far as he is concerned, is agreeable to the limitation; apparently no public question would arise, for the Corporation heretofore has not been a seller of zinc, so whatever process is adopted and used by it there will be no effect on the market situation. It seems unlikely, therefore, that any question about the propriety of such a limitation would arise from any source. Even if the situation should develop unfavorably, the onus on us would not be much greater than it is now; our license agreement with the AS&R Company with respect to our zinc refining processes, under which we limit the use of the product of those processes, already has us committed to such a position.

2. May we properly limit the grade of the product of the licensed process?

Mr. Wing thinks we may not, and Mr. Davis regards the matter as extremely doubtful.

As Mr. Davis points out, the implications in connection with this point are much more unfavorable. And here the prospective licensee is unwilling to accept such a limitation, so that even if a license so limited finally should be taken, we might expect constant pressure for revision. The danger of a public question arising also would be greater, I think, than in the other case, because here the situation as to High Grade zinc would come into question, and our market position could probably be shown to be directly affected by any such limitation imposed upon the Steel Corporation, particularly if such a license position should be extended to include additional companies.

For these reasons, I think we are not warranted in attempting any limitation as to grade. We can save our position in this instance, as well as it can be saved—short of refusing a license, by restricting production under such license to the requirements of the licensee for his own use, a course seemingly warranted by advice of counsel.

[S.] C. H. GEORGE,
General Manager, Patents Department.

CHG.JH

New Jersey's offer to license United States Steel under the vertical retort process patents, subject to the restriction indicated, was extended into 1941 (exhibit 32). We do not know whether United States Steel has accepted the restrictive license offered by New Jersey.

THE CANADIAN APPLICATION

As early as 1929 the Consolidated Mining & Smelting Co. of Canada became interested in New Jersey's vertical retort process. On November 26, 1929, a Mr. Diamond of Consolidated and a Mr. Stiles, chief engineer of Consolidated, visited Mr. George of New Jersey in this connection. I quote from Mr. George's report of the conversation (exhibit 33):

"* * * Mr. Diamond said that they are contemplating the construction of a smelting plant in the eastern part of Canada and are desirous of seeing our furnace before deciding upon the kind of plant they will build. He said that neither he nor Mr. Stiles are very familiar with pyrometallurgical operations as all their experience has been in the electrolytic end. He remarked that they are producing 450 tons of lead per day and 300 tons of zinc at Trail, also a large quantity of silver. Their power situation at Trail apparently is not entirely

Digitized by Google

satisfactory as they are now experiencing a shortage of water for power purposes the same as the municipalities on the Northwest Coast.

"C. H. G."

Mr. Diamond and Mr. Stiles were shown New Jersey's vertical retort plant at Palmerton, Pa. Thereupon Mr. Diamond and Mr. Stiles again visited Mr. George on November 29, 1929. I quote from Mr. George's report of the conversation on this date (exhibit 34):

* * * * * * *

"Mr. Stiles inquired whether we would be willing to give them an exclusive license for Canada. I replied that we would be willing to consider such a matter and that the charge would be based on a commuted royalty for a minimum and maximum tonnage. I explained briefly our ideas about limited production and both gentlemen expressed themselves as being heartily in accord with our ideas. Mr. Stiles remarked that if they should decide to throw their present 300 tons per day production into this process, he assumed that would be given special consideration, and I said it would, as of course that would be a replacement of tonnage and not an addition of tonnage.

* * * * * * *

"C. H. G."

For reasons that do not appear the Consolidated Mining & Smelting Co. did not take a license under New Jersey's Canadian vertical retort process patents at this time. The matter was brought up again in 1937 as appears from an interoffice memorandum written by F. B. Searhart of New Jersey dated October 23, 1937 (exhibit 35), which refers to a visist to a New Jersey vertical retort plant by representatives of the Consolidated Mining & Smelting Co., including a Mr. McBean. The memorandum reads in part as follows—I quote:

* * * * * * *

"On the previous visit of Mr. McBean, which was during the week of September 20, he had expressed a desire to see the vertical smelter plant and mentioned to the writer that he had suggested to his management that a battery of spelter furnaces be installed at Trail in order to act as a balance wheel to the present electrolytic zinc producing capacity. He informed us that they were extremely short of electric energy during the winter months and it was necessary for them to curtail the production of metal. While they have under consideration the installation of more hydroelectric plants and have two rivers in mind for this operation, Mr. McBean is of the opinion that it would be more to the point if the capital were placed in the erection of spelter furnaces.

* * * * * * *

"F. B. SEARHART."

It appears that nothing came of the negotiations at this time between Consolidated and New Jersey, for on February 28, 1941, Mr. Blaylock, president of Consolidated, wrote New Jersey as follows—I quote (exhibit 36):

[Copy]

THE CONSOLIDATED MINING & SMELTING CO. OF CANADA LTD.,
Trail, B. C., February 28, 1941.

Re: Zinc retort process.
J. E. HAYES, Esq.,
President, The New Jersey Zinc Co.,
160 Front Street, New York, N. Y.

DEAR MR. HAYES: It is possible, and even probable, that we will be requested to produce more zinc for the British Munitions people. We haven't sufficient power to instal any more electrolytic zinc at Trail and cannot develop an additional supply in time.

I would like to know if you are willing to license us to use your continuous retort process, and if so, on what terms. We had some correspondence with you several years ago but that would be out of date by now—particularly as far as commutation of royalties was concerned. We have in mind the possibility of building a plant capable of producing 60 tons of zinc per day.

* * * * * * *

Digitized by Google

In addition to this plant at Trail, it is possible that either we or somebody else may be commissioned to build a complete zinc plant somewhere in Eastern Canada for between 50 and 75 tons of zinc per day.

Yours sincerely,

[Sgd.] S. G. BLAYLOCK.

SGBlaylock.ap
cc: R. W. Diamond, R. E. S. Tavert.

Mr. George replied to Mr. Blaylock's letter under date of March 6, 1941—I quote (exhibit 37):

[Copy]

MARCH 6, 1941.

Via Air Mail

Mr. S. G. BLAYLOCK,
President, Consolidated Mining & Smelting Co. of Canada Limited,
Trail, B. C., Canada.

* * * * * * *

DEAR SIR: We are prepared to grant to your Company right and license under our Canadian patents relating to the vertical retort zinc smelting process on the general terms set out below, subject, particularly, however, to the limitations shown with respect to the export of product to the United States or other licensed territories. As you no doubt are aware, we sold our British patents relating to this process to The National Smelting Company Limited, of London, and under the terms of sale the product of the inventions is not to be exported to the United States nor to other licensed territories; in turn, we undertook to make similar requirements of all other licensees as to export to the United States and other licensed territories including Great Britain. It seems to us that under present conditions, however, there should be no difficulty in obtaining the waiver of these limitations as to export to Great Britain during the present emergency.

* * * * * * *

NONEXPORT OF PRODUCT TO TERRITORY LICENSED TO OTHERS

The licensee would undertake not to practice the licensed inventions except in Canada and particularly not to export nor so far as lies in its power permit the export of the products of these inventions to the United States or to any other country in which at such time we have licensed another with respect to these inventions with notice to the licensee in writing by us. Also, the licensee would undertake to comply with reasonable requirements from us as to the marking of the product of the inventions in such manner as would assist in identifying its origin and excluding it from entry into the prohibited territories.

* * * * * * *

Yours very truly,

C. G., *General Manager, Patents Department.*

C. H. George/JH.

Mr. Blaylock wrote Mr. Hayes, president of New Jersey, on March 12, 1941, as follows—I quote (exhibit 38):

[Copy]

THE CONSOLIDATED MINING & SMELTING CO. OF CANADA LTD.,
Trail, B. C., March 12, 1941.

Re: Retort zinc process.

J. E. HAYES, Esq.,
President, New Jersey Zinc Co.,
160 Front Street, New York, N. Y.

DEAR MR. HAYES: I wish to thank you for your letter of March 4th and to say that I have had a fairly complete letter from Mr. George.

The fact that we would be unable to sell zinc produced by this process in Great Britain and other countries is rather serious as 85% of our zinc production has to be exported. However, I am going East the end of this month and if

Digitized by Google

the question is still of vital importance to the British war effort I will try to arrange to visit you and your people.

Yours sincerely,

[Sgd.] S. G. BLAYLOCK.

S. G. Blaylock.ap.

Consolidated Mining & Smelting Co. did not take a license under New Jersey's Canadian vertical-retort process patents at this time. It may be that the reason Consolidated did not take a license was because the proposed license would have prohibited Consolidated from exporting zinc metal produced by the licensed process to the United States, Great Britain, and other licensed territories.

NEW JERSEY'S FOREIGN PATENTS

On December 14, 1933, New Jersey sold its British vertical retort and fractionation process patents to the National Smelting Company, Ltd., a British corporation for $2,000,000, payable in installments. As part of the sales agreement National Smelting Company, Ltd., agreed not to export zinc metal produced by these processes to the United States or to any other country in which at the time of export New Jersey had granted licenses to another under its corresponding foreign patents. National Smelting Company, Ltd., agreed to mark the zinc metal produced by the licensed processes in such a manner as to enable New Jersey to identify its origin and exclude it from entry into prohibited territories. (See exhibit 39.)

On September 16, 1935, New Jersey licensed jointly Metallgesellschaft, A. G., a German corporation, and its American representative, the American Lurgi Corporation, under New Jersey's German fractionation process patents (exhibit 40).

Metallgesellschaft, A. G. is closely affiliated with the I. G. Farbenindustrie of Germany. Metallgesellschaft, A. G., and the I. G. Farbenindustrie jointly own the aluminum plant at Bitterfelt, Germany. We are also advised that the I. G. Farbenindustrie is represented on the Metallgesellschaft, A. G.'s board of directors. A close relationship also exists between Metallgesellschaft, A. G., and the United Aluminum Corporation of Germany, which is owned by the Third Reich.

In sharp contrast with New Jersey's license to the American Smelting & Refining Co. in this country, which limits production to 5,000 tons of high-grade zinc per year, and in sharp contrast with New Jersey's license to du Pont in this country, which prohibited du Pont from producing high-grade zinc by the licensed process, New Jersey's license to Metallgesellschaft, A. G., placed no limit whatever upon the quantity or quality of zinc metal that could be produced by the licensed process provided the proper royalty payments were made. New Jersey, of course, was interested in producing maximum production in Germany in order to procure the maximum revenue in royalties from that country.

Metallgesellschaft, A. G., did agree, however, not to export zinc metal produced by the licensed process to the United States or to any other country in which at the time of export the licensor had granted rights to another under the corresponding foreign patents. Metallgesellschaft also agreed to comply with the licensor's requirements as to the marking of the zinc metal in such a manner as would enable New Jersey to identify its origin and exclude it from entry into prohibited territories.

The license from New Jersey to Metallgesellschaft was amended on February 23, 1939, to include as part of the license territory the former country of Austria which had recently been annexed to Germany (exhibit 41).

On September 16, 1935, New Jersey, with the consent of Metallgesellschaft, licensed Unterharzer Berg—und Huttenwerke, G. m. b. H., a German corporation, under New Jersey's German vertical retort and fractionation-process patents (exhibit 42). As in the case of the license to Metallgesellschaft, A. G., New Jersey placed no limitation upon the quantity or quality of zinc metal that could be produced by the German company provided the proper royalty payments were made, but the licensee agreed to observe New Jersey's customary restrictions upon the export of zinc metal produced by the licensed processes.

Although the formal license agreement between New Jersey and Metallgesellschaft, A. G., and the formal license agreement between New Jersey and Unterharzer Berg—und Huttenwerke, G. m. b. H., were not executed until September

Digitized by Google

16, 1935, production by New Jersey's processes was actually begun in Germany in 1934 in accordance with an option to acquire a license from New Jersey then held by Metallgesellschaft, A. G. Even at this early date, in 1934, Germany recognized the value of New Jersey's processes for military purposes. I quote from a letter written from Berlin on May 4, 1934, by L. Odendall, representative in Germany of the American Smelting & Refining Co., to S. H. Levison, general manager of the American Smelting & Refining Co. in this country (exhibit 43):

BERLIN W. 35, *May 4, 1934.*
Tiergartenstr. 8.

Vertical versus horizontal retorts.

Mr. S. H. LEVISON,
General Manager, American Smelting & Refining Co.,
New York, U. S. A.

DEAR MR. LEVISON: It just occurs to me that you might be interested in an interview with Director Seiffert of the "Berzelius" Metallhutten G. m. b. H. at Duisburg, which has been published in No. 8 of Metallwirtschaft on February 23rd. You will remember that we have met Mr. Seiffert on the occasion of your visit at Duisburg.

Mr. Seiffert said in the interview that two German engineers have carefully examined the operations of the New Jersey Zinc Company and have received all informations on the cost of installation and operation. The result of this study is, according to Mr. Seiffert, as follows:

The zinc loss in the vertical retort is about the same as in the horizontal retorts. The costs of operation with good ores are somewhat lower with vertical retorts than with horizontal retorts; but it seems that this difference is increased in favour of the vertical retort if ores with high iron contents are treated.

The quality of the zinc produced in the vertical retort without any additional apparatus is better than the quality obtained in horizontal retorts as far as the iron and lead contents are concerned. As it is, no doubt, easier to get workmen for the operation of the vertical muffles, new installations would no doubt be equipped with vertical retorts. It would, however, not be advisable in Germany to replace the horizontal retorts of a well-operating plant by vertical retorts.

The costs of erection are about the same for vertical as for horizontal retorts. The quality of the zinc produced in the vertical muffle is better, as mentioned above, than that obtained in the horizontal retort. In order to produce high-grade zinc, an additional process is to be used, which has likewise been developed by the New Jersey Zinc Company. By means of this process high-grade zinc can be produced not only from the zinc obtained in the vertical retort, but also by refining any raw zinc produced in a horizontal retort. The high-grade zinc thus obtained has a purity of 99.99% zinc. *It is very important for Germany that such an installation can be erected at any place with relatively low cost, in order to produce during times of crisis high-grade zinc from raw zinc or zinc scrap as long as these materials are available.*

Also this process has been studied by two German engineers and a refining plant with a daily capacity of 16 tons of high-grade zinc to be produced from German raw zinc is under construction and will start operations probably in June 1934.

* * * * * * *

[Italics supplied.]

Yours very truly,

[S.] L. ODENDALL.

CC/Mr. K. C. Brownell.
Second mail.
File.
LO/Le.

Germany continued to expand its production of zinc by New Jersey processes, as appears from the Minerals Yearbook for 1939. I quote:

"Construction of a second unit of eight continuously operated vertical retorts at Oker was completed in 1939, and construction of sixteen more retorts has begun."

Undoubtedly New Jersey's licenses to the German companies, permitting the unlimited production of high-grade zinc, represented a substantial contribution to the German war machine. On September 22, 1939, Deutscher Volkswirt, a

Digitized by Google

weekly industrial and financial publication of Germany, made the following boast:

"* * * In 1938, Germany was for the first time the biggest producer of aluminum, and Germany produces and consumes more magnesium than all the rest of the world. *Secondly*, the transition from tin metal alloys to alloys with lead again is favorable to Germany, and Germany is actually leading because she has more lead than tin. *Thirdly*, the transition from copper and brass to zinc in particular in small die castings and fittings products, has favored Germany; she is now the greatest producer of zinc in the world after Poland has been destroyed. * * *"

On February 23, 1936, New Jersey licensed the Societe Generale des Minerais, a Belgian corporation, under its French, Moroccan, Tunesian, Spanish, Norwegian, Belgian, Belgian Congo, Holland, Polish, Czechoslovakian, and Luxembourg fractionation process patents (exhibit 44). Here also New Jersey placed no limitation upon the quantity or quality of zinc metal that could be produced by the licensed process provided the proper royalty payments were made. The Societe Generale des Minerais agreed not to export zinc metal produced by the licensed process to the United States or to any other country in which at the time of export the licensor had granted rights to another under the corresponding foreign patents. New Jersey in turn agreed not to export zinc metal produced in the United States by the licensed process to the territory covered by the licenses to the Societe Generale des Minerals.

New Jersey granted the Societe Generale des Minerais an option to acquire the aforementioned licenses on March 10, 1934 (exhibit 45). As early as November 1933 the matter had been the subject of negotiations between New Jersey and M. Pisart, representing the Societe Generale des Minerais. The proposed Polish license under New Jersey's fractionation process was of special concern to New Jersey, for the reason that the Anaconda Copper Mining Co. owned and operated an electrolytic zinc plant in Poland and "personal relations" existed in this country between Mr. Hayes, president of New Jersey, and Mr. Kelly, president of Anaconda. I quote from a memorandum written by Mr. George, of New Jersey, on November 16, 1933, in this connection (exhibit 46):

* * * * * * *

"One other point discussed was in connection with the proposed licensing of a group in Poland and Czecho-Slovakia. We understood that the group in question is backed by French capital. Mr. Hayes mentioned to Mr. Pisart that in view of his personal relations with Mr. Kelly, of Anaconda here, he would not want to do anything in Poland which Mr. Kelly might think was adverse to the interests of the Anaconda Company in that country. Mr. Pisart said he had mentioned the matter to Mr. Kelly, and that there had been no reaction on Mr. Kelly's part. Mr. Pisart did not think that Mr. Kelly's interests would be seriously affected, as he thought that the zinc to be produced in Poland under our processes was intended for export to Russia. He said that if Mr. Kelly raised any question about the matter with Mr. Hayes, Mr. Hayes should refer Mr. Kelly to Mr. Pisart, and Mr. Pisart would undertake to settle the matter.

"C. H. G."

On September 9, 1937, New Jersey licensed the Societa Italiana del Piombo E. Dello Zinco, an Italian corporation, under New Jersey's Italian fractionation process patents (exhibit 47). New Jersey placed no restriction upon the amount or quality of zinc metal that could be produced by the licensed process provided the proper royalty payments were made. This license contained the customary mutual nonexport provisions.

The license agreements between New Jersey and the Societe Generale des Minerais were amended on February 23, 1938, and the licensed territory was extended to include Denmark, Sweden, Switzerland, Finland, Esthonia, Latvia, and Lithuania (exhibit 48). Of the newly licensed territories, Sweden was the only country in which New Jersey held patents on the fractionation process. As to the other newly licensed territories, the license agreement did not purport to be a conveyance of rights under letters patent but was an undertaking on the part of the licensor to provide the licensee with confidential information, including working directions applicable in the use of the fractionation process and to lend to the licensee the licensor's cooperation and assistance in the exercise and use of the inventions and to withhold from others for use in such territories such confidential information, working directions, cooperation, and assistance. The amendment contained the customary mutual nonexport provisions.

Digitized by Google

On June 14, 1939, New Jersey licensed the Financial & Investments Co., "Fininco," S. A., a Luxemburg corporation controlled by the Societe Generale des Minerais, to use the fractionation process in Rumania and Hungary (exhibit 49). The agreement did not purport to be a conveyance of rights under letters patent of Rumania and Hungary, for New Jersey held no patents in Rumania and Hungary, but (as in the case of the February 23, 1938, amendment to the Societe Generale des Minerais license) the licensor undertook to provide the licensee with confidential information, including working directions applicable in the use of the fractionation process and to lend to the licensee the licensor's cooperation and assistance in the operation, the exercise and use of the inventions, and to withhold from others for use in the licensed territory such confidential information, working directions, cooperation, and assistance. New Jersey placed no restriction upon the amount or quality of zinc metal that could be produced by the licensed process provided the proper royalty payments were made. Said agreement contained the customary mutual nonexport provisions.

CONCLUSION

From the above it will be seen that the policy of New Jersey has been to issue licenses freely to European companies for the unlimited production of high-grade zinc by New Jersey processes. This policy is directly counter to the policy New Jersey has pursued in this country. New Jersey has repeatedly refused to license its processes to domestic companies for the production of high-grade zinc, and has repeatedly indicated that New Jersey believes in a policy of limited production, of restricted production—New Jersey's "principal interest being to avoid the production of additional high-purity zinc."

We believe that patent controls as exercised by the New Jersey Zinc Co. are the principal cause of the present shortage of high-grade zinc in this country. We believe that some legislative provision should be adopted whereby New Jersey's patented processes can be made available to the entire domestic zinc industry in order to alleviate the present shortage of high-grade zinc and to insure that the present shortage shall not become increasingly and dangerously acute.

EXHIBIT NO. 135

PARAFLOW AND METHANE STEAM PROCESS (STANDARD OIL OF NEW JERSEY AND I. G. FARBEN)

Statement by John R. Jacobs, Jr.

INTRODUCTION

My testimony before this committee will be limited to a discussion of a product called Paraflow and the Methane Steam process, both of which were directly affected by the cartel arrangement of 1929 between Standard Oil of New Jersey and the I. G. Farbenindustrie of Germany. The formation of this cartel between these two industrial empires operated, as to Paraflow, to create a complete monopoly and give to I. G. royalties which should have gone to American industry. As to the Methane Steam process, the effect was to restrain its use and thus to prevent our strategic explosives industry from obtaining necessary licenses under the patents to increase our war production.

Before taking up these subjects, however, let me sketch briefly the Standard-I. G. basic relationship. I use the word "briefly" because later in the week a witness is going to appear before this committee and present a thorough history of this cartel arrangement from 1929 to date.

On November 9, 1929, Standard and I. G. executed what is referred to by the parties as the "division of fields agreement." Under this instrument, Standard agreed to transfer to I. G. control of any new chemical development not closely related to Standard's then business. I. G., in turn, agreed that should it desire to go into the chemical business anywhere in the world, outside of Germany, that could not be carried on except as a department of the oil and gas business, I. G. would give Standard control. I. G. also agreed to share with Standard, outside of Germany, any new chemical development using petroleum or natural gas as a raw material, but control would be with I. G. Since this agreement was to run at least until 1947, Standard, in effect, promised to stay

Digitized by Google

out of the chemical business for 18 years, except as a junior partner of I. G., and not complete with I. G. It is also worth noting that I. G. did not undertake to turn control of any new chemical development in Germany over to Standard, even though the development should be closely related to the oil business and Standard was given control throughout the rest of the world. On the other hand, Standard did not obtain any such concession from I. G. for the United States. As far as Standard was concerned, I. G. could control any chemical developments outside of the oil field in the United States or anywhere else.

In 1930 Standard and I. G. organized, under the laws of Louisiana, a corporation called Jasco, Inc., for the purpose of carrying out the intention expressed by the parties in the division of fields agreement. Ostensibly, this joint venture was a partnership as each company owned a half interest, but as a matter of fact it was under I. G.'s control. This is true because the Jasco agreement provides that if either party should develop a new chemical product using gas or petroleum as a raw material, that party should control the exploitation of the process who would be entitled to control under the division of fields agreement. As stated above, under the terms of the division of fields agreement, I. G. controlled all new chemical developments unless it was related to Standard's then business.

Standard and I. G. executed another agreement on November 9, 1929, referred to by the parties as the "four party agreement." (The other two parties to the agreement were Standard Oil of New Jersey (Delaware) and Standard-I. G. Co.) By this agreement I. G. assigned to S.-I. G., a patent licensing company owned by Standard and I. G., but controlled by Standard, the exclusive control of all present and future processes, both patented and unpatented for the manufacture of products in the oil industry, but only insofar as these processes were useful in the oil industry. Here again the surrender by I. G. was for the world outside of Germany.

S.-I. G., the patent licensing company, was incorporated under the laws of Delaware. Standard received 80 percent of its stock and I. G., 20 percent.

Both Standard and I. G. realized that inevitably there would arise border line cases, i. e., future processes would be developed that would fall both within and without the defined field as used in the November 1929 contract. So the parties agreed they would negotiate all future difficulties that might arise within the spirit of the basic agreements.

Another contract was entered into by Standard and I. G. on November 9, 1929, called the coordination agreement, and it states in very forceful language that the parties intended the contracts they had entered into on that day to last for a long period of time and to carry them through any eventuality. I quote a paragraph from this agreement:

"In the event the performance of these agreements or of any material provisions thereof by either party should be hereafter restrained or prevented by operation of any existing or future law, or the beneficial interest of either party be alienated to a substantial degree by operation of law or governmental authority, the parties should enter into new negotiations in the spirit of the present agreements and endeavor to adapt their relations to the changed conditions which have so arisen" (exhibit 1).

One other contract was entered into between the parties on November 9, 1929, and other corporations were formed to carry out the purposes of these two corporations. But the above will serve as a background for the story on Paraflow and the Methane Steam process.

PARAFLOW

In 1931 I. G. discovered a product that they called Paraflow. This is a synthetic oil product which was made by the chlorination of paraffin wax. Standard discovered that Paraflow, when mixed with natural wax-bearing oils, had the property of inhibiting the formation of paraffin wax crystals and thereby lowered the pour point of the oil, i. e. the temperature at which it ceases to flow freely. To illustrate its use, our mechanized military units will find oils treated with Paraflow useful during winter military operations as it will prevent, down to a certain temperature, the freezing of the lubricating oils.

The use patent for Paraflow was applied for and taken out in the United States by Standard in 1932 (Davis Patent, U. S. 1,815,022).

Standard-I. G. relationship in regard to pour point depressants.—After obtaining the use patent on this product, Standard claimed to I. G. that the exploitation of Paraflow came within the hydrocarbon field (its own domain) as defined

Digitized by Google

in the four party agreement between Standard and I. G. of November 9, 1929. Standard proposed that, in view of the fact that each party had patents, a special agreement be entered into. I. G. was somewhat reluctant to agree with this contention but, on April 1, 1932, after a good deal of bickering, a contract was entered into by S.-I. G., Standard Oil Development Co. (a 100-percent subsidiary of Standard), I. G. Farben, and Deutsch-Americanische Petroleum Gesellschaft, usually referred to as D. A. P. G. (Standard's German subsidiary). This contract stipulated:

(*a*) Standard Oil Development owns all patent rights for the use of Paraflow;

(*b*) For the world outside Germany, and including the United States, S.-I. G. may grant Development an exclusive license to make and sell Paraflow for use of the said product in admixture with lubricants to improve the fluidity at low temperatures only and to pay to S.-I. G. 17½ percent of the net royalty;

(*c*) In Germany Paraflow should be manufactured exclusively by I. G. and should be sold exclusively (for use as a pour point depressant) by D. A. P. G.;

(*d*) Development might not, without the consent of I. G., import Paraflow into Germany, nor could I. G. export Paraflow from Germany without Development's consent (exhibit 2).

Subsequently, I. G. developed a new pour point depressant which was called PVO (polyvinyl ester of whale oil fatty acids), and contended that this new product did not fall within the narrow field of the Paraflow agreement or the four party agreement. Therefore, it claimed the sole right to exploit PVO. Standard believed that PVO would be a very serious competitor to Paraflow and would offer (I quote from exhibit 3, a letter dated November 13, 1940, written by H. W. Fisher, manager of Standard's commercial department):

"* * * a price or potency competition which would greatly reduce the large profits from this enterprise."

While negotiations were going on in regard to PVO, the war had made it difficult or impossible for Standard to supply Paraflow to all of the European countries in its territory. Thus, Development authorized I. G. to supply Paraflow to Standard-Vacuum in Jugoslavia in December 1939, the division of the profits to be settled by agreement at a later date (exhibit 4). Again on October 3, 1940, Development cabled to I. G. permission to sell Paraflow or PVO in Budapest through D. A. P. G. subject to a later accounting (exhibit 5).

In November 1940, Standard realized that a tentative agreement, effective during the period of the war, had to be made with I. G. covering all pour point depressants. Thus, on November 15, 1940, H. W. Fisher wrote to Chemnyco, I. G.'s representative in the United States:

"* * * whether or not it is advisable at the present time to attempt to arrive at a permanent arrangement to replace the present Paraflow Agreement, a temporary arrangement, recognizing war conditions, is considered advisable by both parties, and the following suggestions are made by Development to I. G.:

"1. I. G. be permitted to sell Paraflow (but not PVO) in the countries specified below in which it is, at present, impossible for Development or its sales agents to effect deliveries from the United States: Albania, Belgium, Bulgaria, Czecho-Slovakia, Denmark, Danzig Free City, France (including Algeria and Tunis), Greece, Holland, Hungary, Italy, Jugoslavia, Lichtenstein, Norway, Poland, Roumania, San Marino, Switzerland, and Turkey.

"The principle being followed here is that since Development is unable to supply its customers directly, it is arranging to supply them temporarily from another available source. If Paraflow is supplied the status quo ante bellum is disturbed as little as possible which is very desirable in an interim arrangement. The sale of PVO in these territories would materially alter such a status quo" (exhibit 6).

In view of the above letter, it is without question the intent of both parties to consider their partnership merely suspended during the present hostilities. After the war, the parties undoubtedly intend to have an accounting, make the necessary financial adjustments, and then continue their unlawful agreement. This is succinctly stated by Mr. Fisher in a letter of August 14, 1941:

"Any distribution of these products (Paraflow, etc.) which is made by the I. G. is understood to be on a temporary basis only, because we are unable to supply" (exhibit 7).

Digitized by Google

Standard's activities in the domestic four point depressant field.—As to the United States, Standard, after executing the agreement with I. G. in 1932, immediately began to exploit Paraflow to its fullest extent. Standard adopted the policy of performing active research work and filing many patent applications in the Patent Office. This is brought out in a letter written by Dr. E. Lieber to Mr. J. A. Britton, both employees of Standard:

"It seems to me that our best hope in protecting our patent structure under the existing circumstances is intensive research work to uncover all the possible pour depressants and to literally 'flood' the patent office with our applications. There is no such thing as filing too many applications. There is, however, great danger in filing too few applications" (exhibit 8).

Standard on January 29, 1934, licensed Standard Oil of California to sell but not to produce, Paraflow in the States of Oregon, Washington, California, Idaho, Nevada, Arizona, New Mexico, Alaska, and Hawaii (exhibit 9); and the Carter Oil Co. to sell Paraflow in Oklahoma, Kansas, Nebraska, South Dakota, Colorado and parts of Iowa, Missouri, and Minnesota (exhibit 10). Standard sells Paraflow in the remaining territory of the United States. Every customer of Standard Oil of California, Carter Oil Co. and Standard signs a license and sales contract under which he agrees to take his entire requirements of pour point depressants from Development during a specified period, and to sell Paraflow only as a blend in oil.

Many products competitive to Paraflow have appeared on the market from time to time but Standard has been very successful in removing competition by agreements with the producers of such competitive products.

In 1932 Mid-Continent Petroleum Corporation secured certain patents for the pour point depressant field. Standard immediately entered into negotiations with Mid-Continent and signed an agreement on May 17, 1932, by the terms of which:

(*a*) Mid-Continent granted to Development an exclusive license under its patents for the life thereof, reserving for itself only operating rights:

(*b*) Development in turn agreed to supply Mid-Continent's requirements of Paraflow at a discount of 33⅓ percent from the current sales price;

(*c*) It was further agreed to give Mid-Continent 25 percent of the net profits from any sales of products covered by Mid-Continent's patents (exhibit 11).

Mid-Continent has not since the date of the agreement manufactured any pour point depressants, but has purchased all its requirements from development. Also development, through 1937, had not used the patents which it acquired from Mid-Continent (exhibit 12).

L. Sonneborn & Sons, Inc., developed a competitive product called Voltol. Development instituted infringement proceedings against Sonneborn, and the two companies thereupon entered into a agreement on April 9, 1934 (exhibit 13). The contract provided that after the submission of proof between the parties supporting their contention of priority, if Sonneborn would prevail, then Development would concede priority. That development knew Sonneborn had priority is indicated in a memorandum by R. T. Haslam, an employee of Standard, in which he stated, that there is "* * * no point in our submitting proof except that it supports the contention that we are really settling on the merits" (exhibit 14).

The effect of this arrangement has been to prevent Sonneborn from manufacturing Voltol and thereby it was removed from the market as a competitor in the pour point depressant field (exhibit 15).

In October 1936, Standard Oil of Indiana put on the market a pour point depressant which it called Pourex. Less than 2 years later, July 1, 1938, Development entered into an agreement with Indiana, whereby:

(*a*) Indiana agreed to pay Development $75,000;

(*b*) Indiana transferred to Development a nonexclusive, unlimited, fully paid-up license under Indiana's patents for pour point depressants with the right to license and sublicense; and

(*c*) Development, in turn, granted Indiana a nonexclusive fully paid-up license under Development's patents to manufacture and to use such depressants and to sell any oil containing a depressant, *but not to sell to others pour point depressants, as such* (exhibit 16).

Thereafter Indiana because of the agreement had to refrain from selling Pourex to other oil companies.

Digitized by Google

In 1936, Socony-Vacuum developed a product called Santopour which was the most serious threat Paraflow had faced in the pour depressant field. Socony had licensed Monsanto Chemical Co. to manufacture and sell the product. Santopour was a much more potent pour depressant than Paraflow, in some oils being twice as potent, and was sold for the same price as Paraflow. Standard considered Socony's action in selling a better product at the same price as Paraflow to be (I quote from exhibit 17) "merely price cutting."

In July 1936, Standard began negotiations with Socony's representatives (I quote from exhibit 18):

"On Wednesday, July 22nd, Mr. Howard, Mr. H. W. Fisher, and the writer called on Dr. Rather and Mr. Lamont of Socony-Vacuum in reference to the Paraflow-Santopour situation.

"Mr. Howard told them that we did not regard their act of bringing out this material as a friendly one and thought that they should have raised this subject with us. He said that he had been informed that our product could be made more cheaply than theirs and he felt that they had no right whatever to put a basically higher-priced material on the market when the only result obtained would be forcing us to reduce the price of our material, when, in fact, we could finally reduce the price to such a point that they could not stay in the business at all. He said that he felt that this was only a question of reputable business practice and that he was very much surprised that they would take any other attitude.

"He further stated that that was the attitude of the New Jersey company and that the only reason why we kept out of certain fields such as paint, was because we did not wish to come into a field that Socony had already occupied."

On August 27, 1936, Standard and Socony executives met and agreed that during the negotiations neither party would cut prices, and Standard would be permitted to bring the potency of Paraflow up to that of Santopour (exhibit 19).

Pending further negotiations H. W. Fisher, of Standard's commercial department, wrote a memorandum dated October 15, 1936, in which he suggested his views as to the handling of Paraflow-Santopour marketing:

"Due to the widespread publicity on Santopour and the claims of considerably greater potency than Paraflow, many pour depressant customers will resent the destruction of competition. They will attribute their loss of substantial potential savings to 'big business.'

"If Paraflow and Santopour are both to be marketed without loss of total income it is apparent that Santopour would have to be adjusted to the same cost per unit of pour reduction as Paraflow. This could be done by either making a substantial increase in the price of Santopour or diluting it to a considerable extent. Either chance would remove any great differences in superiority of one product versus the other, and the marketing of both would simply be a question of one selling organization competing with another with equivalent products selling at the same price.

"If one organization sold both products, a change in price or potency of Santopour would still have to be made as outlined above, in order to preserve the present volume of total business. While we would then be able to offer the customer two products, one of which might be slightly better for his use than the other, the difference would in any case be small, and in the event that we should decide to manufacture Paraflow by the Monsanto process it would be nil. We would have to tell a rather embarrassing story to explain the marked changed in either price or potency of Santopour, and the real reason for the change would be obvious to the trade.

"Our conclusion is, therefore, that the best policy is to retire Santopour as quickly and as quietly as possible, and to market only Paraflow of present potency. We must of course continue to supply Santopour of present potency under the contracts already executed by Monsanto. In order to minimize the loss of good will resulting from again creating a monopoly in the pour depressant field we propose a reduction in the price of Paraflow from the present price (established July 1) of $2.00 in tank cars, $2.05 in light iron barrels, to $1.75 in tank cars, $1.80 in barrels, all f. o. b. Bayonne.

"It is perhaps reasonable to expect that a combination of the Santopour and Paraflow processes will enable us to save at least a part of the proposed price cut. The lower price will bring some new business in the long run" (exhibit 20).

One of the chief obstacles for complete agreement between Monsanto and Socony on the one side, and Standard on the other, was the fact that Standard

Digitized by Google

insisted on paying royalties to I. G., thereby reducing the amounts payable to Monsanto and Socony; whereas, if Standard operated under Socony's patents no such payments would be required. I quote from a letter dated January 18, 1937, from W. F. Burt to J. A. Brown, both of Socony-Vacuum, concerning a conference with Standard:

"I called attention to the fact that if Monsanto, under our patents, manufactured a product for sale to Jersey that Jersey could in all probability be relieved of paying royalty to I. G. Farbenindustrie but the answer came back that the Jersey Company had so many other connections with I. G. F. that they wanted to continue to pay this royalty" (exhibit 21).

Mr. Brown in conveying this information to Orville Hardin, director of Standard, stated:

"When the attempt was made to determine the cheapest manufacture, complications came into the picture, and in particular Mr. Burt was informed that Jersey did not want to be relieved of paying royalty to the I. G. Farbenindustrie because of other connections. Naturally, we do not want to be burdened in any case with paying what we consider to be an unnecessary royalty and aside from this our people are convinced that when all the technical facts are properly appraised and understood Monsanto can demonstrate their ability to manufacture cheaper than either your company or ours entirely aside from the royalty question. Because of Standard Development Company's insistence on royalty and manufacture by themselves of the bulk of the product without regard to cost of manufacture, the negotiators finally arrived at the memorandum which you received" (exhibit 22).

In October 1936, F. A. Howard wrote a memorandum of agreement reached by Socony and Standard, whereby Monsanto assigned its Santopour business to Development, and Development agreed to pay Socony 35 percent of the profit on pour point depressants sold to persons other than Socony and Standard. Subsequently, on the advise of counsel that a more valid reason for combining the business of the two groups should be shown on the face of the agreement, another agreement was substituted for the above in which the alleged settlement was based upon the infringement of certain patents.

Messrs. Howard and Currie then drew two agreements primarily based on infringement of Standard's Davis patent. A penciled memorandum by W. E. Currie to H. W. Fisher, both of Standard, dated October 30, 1936, states in regard to the two drafts:

"These look as if we are trying to 'rub it in' on Mr. Lamont [of Socony] as to infringement. The only excuse is that our outside counsel advised this as the only way to form a basis for an agreement which is sound under the antitrust laws" (exhibit 23).

Under the agreement as finally executed on January 1, 1938, the manufacturing was divided between Development and Monsanto; Development, however, remained in complete control of the pour point depressant business. Development granted to Socony and Monsanto a nonexclusive license to make pour point depressants, but the amount that could be sold by them was limited to 20 percent of the aggregate amount of pour point depressants sold under Development's patents by all of the parties during any one year. Monsanto and Socony agreed to pay Development 3 percent of their gross receipts from their sales under Development's patents and 30 percent of the net sales of any excess. The agreement fixed the potency, specifications, and the prices under which Monsanto and Socony were permitted to sell pour point depressants: Development on its part agreed to sell pour point depressants on the same terms as it fixed for Monsanto. The agreement was to continue in force until on or about July 14, 1948 (exhibit 24).

Since the execution of the agreement Monsanto has been particularly skittish about the antitrust laws. On June 7, 1938, Mr. Joseph R. Mares, of Monsanto, wrote to Mr. Fisher and, after referring to a recent antitrust decision, stated:

"It occurs to me, in view of the importance that both Monsanto and Standard Development attached to the Anti-Trust legislation in connection with the Pour Depressant contract, that your legal staff has or is considering this situation" (exhibit 25).

Again, on June 4, 1940, Mr. Mares referred the Consent Decree filed in the National Container Association case to Standard (exhibit 26). To this letter Mr. R. C. Wilson of Standard replied:

"I think that our case may be distinguished from the container case in that our products are covered by patents. Irrespective of that fact, I believe that consid-

Digitized by Google

erable trouble in the future may be avoided if the Santopour contract was examined in the light of the Supreme Court's decision in the Madison and the Ethyl Gasoline antitrust suits" (exhibit 27).

Also, when the potency of Santopour was reduced, such a disturbance was made that Development was willing not to insist upon the full reduction agreed to (exhibit 28), and the high royalty rate of 30 percent very effectively stopped sales by Monsanto in excess of its 20 percent quota. I quote from a letter dated February 14, 1940:

"Mr. Mares of Monsanto * * * stated that his company would prefer more leeway in making external sales. It seems that the high royalty rate of 30% has prevented Monsanto from adopting a vigorous sales program. Mr. Mares stated that on a few occasions some prospective customer was unable to obtain Santopour because the quota was fulfilled prior to receipt of the order. Mr. Mares' viewpoint is that this is an unhealthy situation from an antitrust standpoint and suggests that the agreement be amended so that if Monsanto exceeds its quota in any one year, then the amount of the excess will be deducted from the amount of pour depressants of the phenolic type purchasable by Development from Monsanto under the agreement" (exhibit 29).

I also quote from a memorandum prepared by Mr. Wilson of Standard, dated February 20, 1940:

"I conferred with Dallas Lamont about the suggestion Mr. Mares made concerning the amendment to the Monsanto-Development pour depressant agreement. I told Mr. Lamont that the high royalty rate of 30% and the obligation of Development to purchase pour depressants of the phenolic type were inserted by Messrs. Davis and Clark in order to justify the contract from an antitrust standpoint. Mr. Lamont said that he did not think the suggestion would improve the agreement from a legal or antitrust standpoint, although he recognized some danger in the inability of Monsanto to supply customers when their quota has been fulfilled (exhibit 30).

From the above evidence, I believe this committee will agree with the statement made in May 1941 by an employee of Standard's Paraflow Division.

"Up to the present time the business of this Department has been considerably favored by a lack of competition on its principal products" (exhibit 31).

What financial benefits did Standard receive from this so-called "lack of competition"? Within 2 years after Paraflow's introduction into the United States in the latter part of 1931, about 75 percent of the nationally branded lubricating oils used in this country were being treated with Paraflow to lower their pour point (exhibit 32). In 1939 about 90 percent of the refineries using Pennsylvania crudes, which contain paraffine, employed Paraflow.

In November 1939 a Standard official wrote:

"Sales of Paraflow were initiated in 1931 with sales of 35,000 gallons for the year. It rose to approximately one-half million gallons in 1933, and since then there has been a steady rise in the use of Paraflow so that we are able to estimate that the year 1939 will end with a million gallons consumed" (exhibit 33).

In June 1941 "sales for five months exceeded last year's sales for seven months" (exhibit 34).

Between 1931 and July 1937 the price of Paraflow fell from $3 a gallon to $1.90 a gallon. Since July 1937 the price has remained unchanged. There follow figures on Paraflow sales during 1939 and 1940 (exhibit 35):

	1939	1940
Quantity sold.....gallons..	813,890½	782,889½
Amount of sales	$2,149,097.45	$2,103,814.40
Profit before royalty	1,350,343.23	1,440,537.62
Royalty (17½ percent to S. I. G.)	236,310.07	252,094.08
Net profit	1,114,033.16	1,188,443.54

It is to be borne in mind that out of the 17½ percent royalty paid to S. I. G., Standard was entitled to 80 percent of this amount under the basic agreement of 1929. In other words, out of the $236,310.07 paid S. I. G. in 1939 and the $252,094.08 in 1940, Standard received back $189,048.06 and $201,675.26, respectively. Thus it is seen that the amount of sales in 1939 were $2,149,097.45 and Standard received a profit of $1,303,081.22 and in 1940 out of sales totaling $2,103,814.40, Standard received $1,390,118.80. Therefore, Standard during 1939

Digitized by Google

and 1940 received a net profit of more than 50 percent of sales on its Paraflow business.

On February 20, 1940, R. C. Wilson of Standard wrote a memorandum concerning a conference he had with Mr. Lamont, of Socony-Vacuum (I quote from exhibit 30, which has already been introduced):

"Mr. Lamont feared that one or more of Monsanto's customers might complain to Washington and thereby instigate an investigation of the pour depressant business."

Mr. Lamont's fears were justified because, as this committee knows, an investigation of the pour point depressant business was carried on by the Antitrust Division of the Department of Justice and a consent decree was entered in Newark, N. J. on March 25, 1942. Under this decree the agreements that Standard executed with I. G., Mid-Continent, Sonneborn, and the Socony-Vacuum (discussed supra) were adjudged unlawful, and Standard was enjoined and restrained from the further performance of any of their provisions. Also, all Paraflow patents held by S. I. G., which includes the patents of both Standard and I. G., are required to be licensed to the public royalty free during the present emergency and reasonable royalty rates are to be charged thereafter.

METHANE STEAM PROCESS

This is a commercial process used to manufacture hydrogen from natural gas (methane). The hydrogen produced can in turn be used to make a variety of products, such as synthetic ammonia for conversion into explosives or fertilizers; hydrogenated food fats, an important use for the Germans; and gasoline and crude oil by combining the hydrogen with petroleum, the so-called hydrogenation process, one of the first methods for making aviation gasoline.

Standard-I. G. relations.—As construed by Standard and I. G., the four party and division of fields agreements of November 9, 1929, gave Standard exclusive licensing rights on I. G.'s methane steam process, as well as its own methane steam process, insofar as any prospective licensee intended to use the hydrogen produced to make commodities generally sold in the oil industry (e. g., gasoline). Insofar as the licensee desired to use the hydrogen produced to make a chemical product, such as synthetic ammonia, control of the exploitation of the methane steam process was left with I. G.

On the records of the United States Patent Office, I. G. appeared as record title holder of patents originating with it, and Standard appeared as the holder to its processes. As of 1940 I. G. held 18 United States patents covering aspects of hydrogen manufacture and Standard held 27 United States patents in the same field. Of these 45 patents, 4 of I. G.'s patents were considered to be necessary to practice the methane steam process—1,921,856, issued August 8 1933; 1,934,836, issued November 14, 1933; 2,038,566, issued April 28, 1936; and 2,083,795, issued June 15, 1937 (exhibit 36).

Since the methane steam process was extremely important and of commercial value to oil-chemical refining, it was the subject of many discussions between Standard and I. G. during the years since the basic agreements. On December 15, 1937, Standard agreed with I. G. to pass to I. G. all of Standard's "know how" concerning the manufacture of hydrogen, provided that I. G. would use its knowledge only in connection with hydrogen plants which were intended to be employed for the synthesis of ammonia and other nitrogen derivatives. Standard further required that I. G. would endeavor to obtain and pass back to Standard, for Standard's use only, all of the "know how" that was acquired by I. G. from any licensee. As late as 1940 I. G. claimed that this agreement had been intended to include a provision granting to I. G. licensing rights on Standard's methane steam patents, insofar as the license was to cover a field outside the field of oil company operations; that is, the field reserved to I. G. under the 1929 agreements.

On December 18, 1940, Dr. Mueller, of Chemnyco, I. G.'s representative in this country, wrote to Mr. Currie, of Standard:

"The basic idea of the understanding between Standard Oil Development Company and I. G. regarding the licensing of the hydrogen process for the ammonia synthesis was, we believe, to have I. G. utilize this process in the field referred to, at its discretion; it was for this reason that the 1937 agreement wa sconcluded" (exhibit 37).

Standard must have agreed with this interpretation because on February 10, 1941, an agreement was prepared by Standard along the lines suggested above by Dr. Mueller. By the terms of this contract, Standard granted to I. G.: "* * *

Digitized by Google

the right to grant licenses under United States patents and patent applications owned by Standard Oil Development Company and covering the manufacture of hydrogen by the methane steam process * * * for use in ammonia synthesis" (exhibit 38).

This agreement was accepted by I. G. in September 1941, and on September 4, 1941, W. E. Currie, of Standard, wrote to Dr. Hockschwender, of Chemnyco (exhibit 39), "the agreement may now be considered complete."

Under the terms of the above contract it is important to emphasize that Standard, this late in 1941, did not receive from I. G. the right to license I. G.'s methane steam patents for the production of synthetic ammonia. In other words, as recent as September 1941, only 3 months before Pearl Harbor, I. G. received from Standard the exclusive right to license Standard's methane steam patents in the ammonia synthesis field, along with its own United States patents; but Standard limited itself in the right to license these patents to the hydrocarbon field, a right Standard had by contract since 1929. Furthermore, Standard knew at the time of these negotiations with I. G. that the Atlas Powder Co. and many other companies were seeking licenses to use the methane steam process for use in the production of explosives.

The assignment to S.-I. G.—On September 25, 1939, the month war was declared by Germany, Mr. Frank A. Howard, president of Standard Oil Development Co., met Dr. Ringer, of I. G., at The Hague, Holland. Mr. Howard reported to his board of directors in a letter dated October 12, 1939, in which he stated:

"I was able to keep my appointments in Holland, where I had three days of discussion with the representatives of the I. G. They delivered to me assignments of some 2,000 foreign patents and we did our best to work out complete plans for a modus vivendi which would operate through the terms of the war, whether or not the U. S. came in. All of the arrangements could not be completed, but it is hoped that enough has been done to permit closing the most important uncompleted points by cable. It is difficult to visualize as yet just how successful we shall be in maintaining our relations through this period without personal contacts" (exhibit 40).

Among these 2,000 patent assignments obtained from I. G. by Mr. Howard were the methane steam patents.

On September 1, 1939, the same day war was declared and only 25 days before Mr. Howard met Dr. Ringer, Standard wired I. G.:

"We are interested in acquiring your capital stock interest in Standard-I. G. and are prepared to pay $20,000 for same stop please cable whether you wish to sell at that price" (exhibit 41).

On September 5 I. G. answered:

"Refer to your cable to Dr. H. S. (Dr. Schmitz) we hereby sell to you our capital stock interest in Standard-I. G. at the price offered" (exhibit 42).

Why did Standard purchase I. G.'s 20 percent stock interest? Mr. W. Schaeffer, assistant comptroller of Standard, in a letter dated September 8, 1939, to F. H. Bedford, Jr., a member of Standard's board of directors, gave the reason as follows:

"Of course, what we have in mind is protecting this minority interest (I. G.'s) in the event of war between ourselves and Germany as it would certainly be very undesirable to have this 20% interest in Standard-I. G. pass to an Alien Property Custodian who might sell it to an unfriendly interest" (exhibit 43).

The methane steam patent assignments, delivered to Mr. Howard by I. G., were assigned to S.-I. G.

Standard was thus in a dilemma when Atlas Powder Co. early in 1940 applied for a license to operate under the methane steam patents. I quote from a letter dated June 10, 1940, from Mr. Fisher to Mr. Currie, both employees of Standard:

"* * * I advised Chemnyco that I was somewhat worried as to who the licensing agent should be and that before any license was issued I felt that you should render an opinion. * * * My worry in this connection arose as follows:

"If Hydro Patents is the assignee of patents covering hydrogen manufacture, could any doubt be cast on Hydro Patents' title if we subsequently were at war with Germany and it then became known that I. G. had granted a license under our patents in the ammonia field" (exhibit 44).

To this letter Mr. Currie replied:

"* * * These patents are now assigned to I. G. on the records of the United States Patent Office. We have, however, in our files, an assignment of these patents from I. G. to Standard-I. G., bearing date in September 1939. Ac-

Digitized by Google

cordingly, if I. G. now issues a license to Atlas Powder Company and we subsequently file our assignment, it will be apparent to any one who investigates the matter that I. G. granted a license under the patents after title had passed to Standard-I. G.

"It is unlikely that we shall file the assignments from I. G. to Standard-I. G., but if we do we can always refer back to the original agreement of November 9, 1929, from which it will be clear that our rights under the patents for hydrogen manufacture apply only to the making of specified petroleum products.

"Mr. Joslin and I agreed that there would be no harm in I. G. granting the license to Atlas Powder Company. If we record the assignment from I. G. to Standard-I. G., we should probably then execute an agreement authorizing I. G. to grant this license as of the date that it was granted. If any question of taking over the patents by the Government arises, it would undoubtedly be necessary to show the whole contract arrangement and our title to the patents, insofar as they relate to the hydrocarbon field, could be easily established as of the date of their issuance, or earlier * * *" (exhibit 45).

As stated in the above letter by Mr. Currie, these patents which were assigned to S.-I. G. in September 1939 were on record in the United States Patent Office as belonging to I. G. So long as the record title holder of these patents was I. G. Standard could refer all applicants for licenses under the methane steam process for use in ammonia synthesis to I. G.; as Standard was obligated to do under its agreements.

I. G.'s position on use of methane steam process in this country.—From the above it is obvious that Standard was not interested in the methane steam process in the production of any product that did not fall within the oil industry. Therefore, it left with I. G. the complete control over the production of hydrogen used in the production of synthetic ammonia. Since this chemical is basic to the production of explosives, I. G. never did enter the synthetic ammonia field in the United States. On the contrary, it carried out a policy of retarding the use of this process by American industries. This policy of Standard, leaving the control of this process with I. G., played right into the hands of I. G. in that I. G. was not interested in the royalty received from licensing this process but was more interested in retarding our building up this industry.

As early as 1933 the Hercules Powder Co. sought the I. G. rights for an ammonia plant in this country. I. G. turned down the request, pleading that "* * * because of our other nitrogen interest we were not in a position to permit your firm to use our process and experience for the productinn of hydrogen and ammonia synthesis" (exhibit 46).

Hercules renewed its request for a license in April 1936, and I. G. took the matter up with du Pont. Chemnyco reported to I. G.:

"Dupont takes the position that I. G. is free to enter into an agreement with Hercules and that du Pont could not be sore at I. G. if I. G. entered into such an agreement. Wardensburg (head of du Pont's ammonia department), however, expresses the opinion that in order to reach the understanding between du Pont and I. G. which he and other du Pont executives desire, it would be better if I. G. were not burdened by commitments in the United States" (exhibit 47).

In reply to the above communication, I. G. cabled Chemnyco, "* * * in view of du Pont's position, we think it is expedient to reject the Hercules proposal" (exhibit 48).

Accordingly, I. G. wrote to Hercules Powder Co., "* * * we have again reach3ed the conclusion that, because of our other interests in the nitrogen field, we are not in a position to put at your disposal the experience you desire" (exhibit 49).

This incident was closed when I. G. reported back to du Pont that Hercules had been stopped once more. Chemnyco reported to I. G. on June 11, 1936, "* * * I beg to advise you that I have communicated your position to Mr. Wardenburg over the telephone. Mr. Wardenburg thanked me very much and remarked that du Pont appreciated I. G.'s decision in this matter" (exhibit 50).

The defense program and the European war greatly increased the demand for synthetic ammonia in this country. The Atlas Powder Co. sought licenses under the I. G. process in the latter part of 1939. In connection with the Atlas request for a license Chemnyco wrote to I. G. on December 9, 1939, that, "the projection of Atlas Powder Company is analogous to the projection of Hercules. It will be carried out irrespective of whether or not you will give Atlas a license and technical advice" (exhibit 51).

Digitized by Google

Chemnyco then asks a question of I. G. which reveals what the I. G. policy had been up to that time:

"We do not know whether under these circumstances you would still refuse to promote in any way the building of basic nitrogen plants in the United States."

Since further delay was no longer within its power, I. G. continued its negotiations with Atlas and reopened negotiations with Hercules, although Hercules had been turned down in 1933 and 1936 on the ground that I. G. had commitments with du Pont. On June 28, 1940, an agreement with Hercules was effected covering the ammonia process (exhibit 52).

After the December 1939 letter, negotiations with Atlas also made progress, and on January 5, 1940, Atlas was granted the permission to inspect the operation of Standard's plants which used the same process (exhibit 53).

The negotiations between Atlas and I. G., however, were ended abruptly by I. G. On June 9, 1940, I. G. cabled Chemnyco: "For special reasons we are compelled to discontinue negotiations with Atlas" (exhibit 54).

On June 11, 1940, Chemnyco wrote to Atlas: "* * * I. G., for the time being, are not in a position to grant a license. To their regret they are also not able to indicate at what future time negotiations on this matter might possibly be resumed" (exhibit 55).

This abrupt break in the negotiations was occasioned by an item which had appeared in the Chemical Trade Journal on February 16, 1940:

"Explosives for the Allies: A factory in the U. S. A.—The president of the Atlas Powder company, Wilmington, Del., announced in New York on February 8 that the British government had advanced money to his company to build an explosives plant, of which the total output would go to the British and French armies. The work would begin immediately, and it was expected that the plant would be in operation within six months" (exhibit 56).

Referring to this statement, Chemnyco cabled I. G. on July 8, 1940:

"Methane Steam Process your cable July sixth information given Chemical Trade Journal correct but please consider that plant mentioned therein will be located great distance from Missouri where ammonia plant is to be erected stop As explained in our letter June 19 and our cable July third party assures ammonia produced Missouri plant will be used only in manufacturing commercial explosives and fertilizer former being used exclusively in middle west mining operations stop" (exhibit 57).

Clearly, I. G. broke off negotiations because it feared that Atlas would use its process to make munitions for the British and French. Atlas, however, assured Chemnyco that such was not the case and tried to soothe I. G. with proof that it was not really cooperating with the British and French. As related by Chemnyco to I. G. in a letter of June 19, 1940:

"Mr. Power (Atlas Powder Company) at a recent conference mentioned the agreement by which Dr. Duisberg has talked to you * * * (mentioning the arrangement to build, at the expense of the British and French, plants to produce and fill their orders for munitions) and called our attention to the fact that other American firms, for instance duPont, had likewise entered into an agreement of this sort. He added that such agreements made matters more difficult for those who give orders" (exhibit 58).

This last point was elaborated upon by Chemnyco in its letter of July 23, 1940, to I. G.:

"Atlas refused to carry out orders for the British Government unless this government was willing to pay for the building of plants which Atlas had to erect for this purpose. Atlas pointed out that this attitude on its part made matters considerably more difficult for the British Government and that the British Government would have preferred it if Atlas had been willing to carry out this order without attaching this condition, in which case the papers would not have mentioned this transaction" (exhibit 59).

Atlas's promise to use the process for commercial explosives only, even though the license was to be obtained under I. G.'s United States patents, reveals how far I. G. has been able to obstruct our defense efforts. Manifestly, Atlas and Hercules would not have sought the I. G. process if other available processes were equally as good. Chemnyco's letter of July 23, 1940, to I. G. indicates that the I. G. process is rated as the most desirable by the industry in this country. I quote from exhibit 59, introduced supra:

"To judge by the opinions which interested parties have expressed to us about your process for the manufacture of nitrogen from methane, there seems to be no doubt that your process, as compared with competing processes, is the best, and the most economical."

Digitized by Google

The value of I. G.'s process is also brought out in a memorandum by Mr. Currie of Standard, written in March, 1941:

"I. G. believes that there is no substantial competition in this field, as the steam-iron process is said not to be competitive with the methane-steam process" (exhibit 60).

This superior process has been under United States patents at least since 1933 when Hercules was first refused a license under them, yet it was kept out of the United States until 1940.

In this same letter of July 23, 1940 (introduced as exhibit 59 supra), urging I. G. to grant Atlas and others a license under its patents on the ground that "by refusing to grant such licenses you will not seriously hamper a nitrogen program that may be devised by the U. S. A. Government; for, on the one hand, it is possible to base new ammonia plants entirely or primarily on coal, on the other hand, it might be possible to use for the production of hydrogen from methane, the process which the Shell Union Oil Corporation is using in its nitrogen plant in California."

Only as a secondary inducement does Chemnyco mention that—

"It is obvious that you would lose considerable income from license fees and would, moreover, lose opportunities for the further development of your business connections in this country."

As it became more apparent to the Germans that Britain could not be conquered quickly and decisively and that the United States for all practical purposes was rapidly assuming the role of Britain's ally, I. G. became even more wary of permitting the use of its processes in the United States. Even though Chemnyco, I. G.'s United States representative, urged a license for Atlas in June and July, of 1940, as late as 1941 no license had yet been issued to that company. The pressure for licenses in this country was so heavy that Standard finally wrote to Hochschwender, of Chemnyco, on March 28, 1941, that—

"I believe it would be very desirable to secure from I. G. a statement of its position as to the licensing of the hydrogen manufacturing patents for the production of ammonia. If I. G. is not willing to grant such a license in general terms, it might be put on the basis of plants having specified capacities. If you approve, we shall be obliged if you will find out what I. G.'s position is on this matter" (exhibit 60).

On April 11, 1941, Hochschwender told W. E. Currie of Standard:

"On April 11th Dr. Hochschwender told me that he felt sure I. G. would not agree to permit the granting of licenses under its hydrogen manufacturing patents, except with respect to particular installations about which it had been advised and of which it approved. Accordingly, he said he thought it better not pass on to I. G. the suggestion in our letter of March 28, 1942" (exhibit 61).

I. G. is thus trying to keep sterile the processes which it has under United States patents, insofar as they can be useful in the defense program, regardless of the profits to be derived from the licensing of this process.

The history of the use of the methane steam process in this country shows that I. G. operated first in the interest of Germany's political and military objectives and only secondary for the benefits of its own business interests. It used this secondary business reason as a clever disguise for its primary nationalistic purposes. Thus, ostensibly, Hercules was refused an ammonia process license in 1933 and 1936 because of the du Pont-I. G. relationship, but the fundamental motive was to keep at a minimum the production of this essential raw material for munitions. Du Pont, with its large ammonia plant, was not enthusiastic about pushing the erection of added capacity operating under a superior process. Also, Standard was never in the ammonia business and, therefore, was willing to turn the methane steam process over to I. G. for exploitation. The net result is that I. G. was able to postpone the use of its processes here as long as it desired and yet always be able to hide its real purpose behind agreements with an American company.

Under the consent decree entered in Newark, N. J., the Methane steam patents of both Standard and I. G. were opened to the public royalty-free during the duration of the emergency.

CONCLUSION

The exploitation of Paraflow and the methane steam process by Standard and I. G. are good examples of how the cartel arrangement was to the advantage of both parties concerned and to the detriment of the public. Standard was

Digitized by Google

interested in the exploitation of Paraflow and, therefore, created a monopoly in this country and received large profits for its unlawful acts. On the other hand, Standard was not interested in the exploitation of the methane steam process for the production of synthetic ammonia and left the control of this process to the discretion of I. G. Unlike Standard, I. G. was not interested in obtaining large royalties from this process because it served I. G.'s interests more by preventing American industry from getting the use of this vital process during the war emergency.

EXHIBIT No. 136

THE DYESTUFFS CARTEL

Statement by Charles D. Pack

PRELIMINARY STATEMENT

A world-wide cartel to which the principal dyestuff manufacturers of Europe have been parties, and with which certain American companies have been associated, characterizes the international organization of the dyestuffs industry. The cartel arrangements have had a profound influence on trade and commerce in the United States, not only through participation by American manufacturers: but also through the presence of companies controlled by members of the cartel in this country, and by the adoption of cartel practices in the domestic market. The results of the practices engaged in have been the following: (1) Restraint of free competition in the manufacture and sale of dyestuffs in the United States, (2) restriction of exports from and imports into the United States, (3) allocation of world markets.

The original parties to the European Dye Cartel organized in 1927 were I. G. Farbenindustrie of Germany, three Swiss companies—Ciba, Sandoz, and Geigy—who were coordinating their own operation under a so-called community of interests agreement, and Kuhlman, the leading French dyestuff manufacturer. In 1931, Imperial Chemical Industries, Ltd., of England, became a member.

I. G. Farben has controlled in this country General Aniline & Film Corporation; three Swiss companies each have representatives in the United States; two other major American manufacturers—E. I. du Pont de Nemours & Co., and Allied Chemical & Dye Corporation—have had far-reaching agreements with the cartel respecting various world markets. These companies dominate more than 80 percent of the domestic market in dyestuffs; with the addition of American Cyanamid Co., the group total rises almost to 90 percent.

In this statement I shall trace briefly the history and importance of the dyestuff industry, indicating how Germany achieved its position of dominance, the development of a domestic industry in the United States during the war and the apparent termination of dependence on Germany, the reentry of foreign interests following the war, the movement in Europe toward consolidation and cartelization with its impact on the domestic pattern; finally, a summary of the organization and position of the industry in this country at the present time.

I. BACKGROUND

1. *Importance of dyestuff industry.*—The manufacture of dyestuffs is a strategic branch of the chemical industry. Dyestuffs are used principally to color textiles, paints, papers, leather, and other miscellaneous substances. Formerly they were obtained from natural products such as roots and leaves of certain plants, but in the middle of the last century scientists in Europe discovered that dyestuffs could be produced synthetically from certain organic chemicals known as intermediates, which are derived from coal tar. Although the initial developments were worked out in England and France, more rapid scientific and commercial advance took place in Germany where, in the last decades of the century, the industry of synthetic-dyestuff manufacture made rapid strides.

The complexity of the dyestuff industry is illustrated by a chart which I introduce as exhibit 1. Practically all finished dyestuffs trace their origin to coal tar, one of the byproducts from the production of coke. From the processing of this coal tar, the basic crudes—benzene, toluene, naphthalene, and anthra-

Digitized by Google

cene—are obtained, and from these coal tar crudes are prepared the 200 to 300 intermediates from which hundreds of colors are made. The final dyestuffs product is the result of further refinement and synthesis with other intermediates or so-called heavy chemicals, such as sulfuric or nitric acid. By slightly altering one of the steps in this process, or by diversion from use in producing dyestuffs, many of these intermediates may be utilized in the manufacture of explosives and related products. Furthermore, plants producing dyestuffs intermediates often may be converted with facility to the production of chemicals vitally essential in war time. Recognition of this fact was another reason for the impetus, often Government aided, given to the dye industry in Germany, and another respect in which the United States and its allies found themselves retarded during the last war which experience proved conclusively that an organic chemical industry is the basis of any scheme of national preparedness. The cartel movement in Germany was fostered by the development of the dye industry and early in the present century the tentacles of the German manufacturers began to reach out for new fields of conquest. By virtue of the policy of dumping dyestuffs abroad, and also through the myriad of patents taken out in other countries, including the United States, the development of the dyestuffs industry outside of Germany was considerably retarded. Switzerland constitutes an exception; then despite dependence on outside sources for raw materials, through skillful research, development paralleled on a smaller scale that of Germany.

Before the World War, about 75 percent of the world's supply of dyes and nearly all intermediates were made in Germany. The United States produced only 10 percent of its consumption of dyes and imported about 90 percent of the intermediates used in this production, the total value of which was less than $3,000,000. In 1914, there were seven establishments in the United States making coal tar products, employing 528 persons. These factories were little more than assembling plants, since they were all almost entirely dependent on imported intermediates.

Nor did the tariff offer substantial encouragement to domestic industry, for, although there was an ad valorem duty of 30 percent on most finished products, certain important colors were duty free, and the rates on intermediates were sufficiently low for German agencies to import them and perform the final steps in production in this country.

The great bulk of dyes imported from Germany were produced by six large manufacturing houses, Bayer, Badische, Berlin Anilin Works, Cassella, Hoechst, and Kalle, all of whom had well organized sales branches in this country.

2. *Effect of World War I.*—The war gave tremendous impetus to independent production in countries theretofore dependent on Germany. In 1918 there were 78 firms which were making dyestuff in the United States; by 1919 the number of dyestuff manufacturers had increased to 90 and their production was valued at approximately $67,500,000.

Certain additional stimuli accelerated domestic progress. The Revenue Act of 1916 revised upward the tariff on dyes and other coal-tar products, including intermediates, and provided that if at the end of 5 years the American industry had not expanded so as to produce 60 percent in value of the domestic consumption, the specific duties should be removed. In any event, the duty should be lowered 20 percent each year after the expiration of the 5-year period. More important was passage of the Trading With the Enemy Act in October 1917, which empowered the Alien Property Custodian, appointed pursuant to this statute, to license domestic corporations to manufacture and sell products covered by enemy-owned patents. An amendment to this act, November 4, 1918, empowered the custodian to seize, hold, and administer such patents, copyrights, applications therefor, etc. Accordingly, title to all patents held in the name of alien enemy citizens or corporations was seized by the custodian; and the disruption and disorganization of the German agencies in this country appeared now to be complete.

3. *Early post-war developments.*—At the close of the war German manufacturers sought to regain their lost markets in countries which had established independent industries and also to reestablish their markets in nonproducing countries which had been lost to other suppliers during the war. Swiss manufacturers, largely dependent on export trade, had greatly expanded that trade during the war, owing to the absence of German competition. In the post-war period the Swiss undertook to consolidate this position. These countries which had established dyestuff industries during the war, particularly the

Digitized by Google

United States and England, endeavored to protect their infant industries by subsidy, tariffs, and similar measures.

The annual message of President Wilson to Congress delivered May 20, 1919, contained the following statement:

"Nevertheless there are parts of our tariff system which need prompt attention. The experiences of the war have made it plain that in some cases too great reliance on foreign supply is dangerous, and that in determining certain parts of our tariff policy domestic considerations must be borne in mind which are political as well as economic.

"Among the industries to which special consideration should be given is that of the manufacture of dyestuffs and related chemicals. Our complete dependence upon German supplies before the war made the interruption of trade a cause of exceptional economic disturbance. The close relation between the manufacture of dyestuffs on the one hand and of explosives and poisonous gases on the other, moreover, has given the industry an exceptional significance and value.

"Although the United States will gladly and unhesitatingly join in the program of international disarmament, it will, nevertheless, be a policy of obvious prudence to make certain of the successful maintenance of many strong and well equipped chemical plants. German chemical industry, with which we will be brought into competition, was and may well be again a thoroughly knit monopoly, capable of exercising a competition of a peculiarly insidious and dangerous kind."

As a result of considerable agitation for exclusion, the Dye and Chemical Control Act of 1921, with subsequent amendments, excluded dyestuffs and all other coal-tar derivatives from the United States unless it was determined that no satisfactory substitute was obtainable in this country in sufficient quantities and at reasonable terms as to quality, price, and delivery, and was required for consumption by a domestic consumer within 6 months after its receipt here. The Tariff Act of 1922, which superseded this measure, provided that the ad valorem portion of the rates on all dutiable coal-tar products should be based on the American selling price of any similar competitive article produced in the United States; this duty was fixed for a period of 2 years at 55 percent for intermediates plus 7 cents per pound and at 60 percent for dyestuffs plus 7 cents per pound; thereafter the ad valorem rates were set at 40 percent and 46 percent, respectively, but the specific duty of 7 cents per pound was to be continued.

Furthermore, because it was felt that German patents had formed an obstacle to the development of the American dyestuff industry, the idea was conceived that the German patents seized during the war should be placed in the hands of an institution strong enough to protect them and made available to American industry as a whole. Accordingly, a corporation known as the Chemical Foundation, Inc., was organized. Its purpose, as stated in the report of the Alien Property Custodian (1919) was "to acquire by purchase those German patents and to hold them as a trustee for American industry, 'for the Americanization of such institutions as may be affected thereby, for the expulsion or elimination of alien interests hostile or detrimental to the said industries and for the advancement of chemical and allied science and industry in the United States.'"

The company was capitalized at $500,000. Under its charter, only nonexclusive licenses were to be granted on equal terms to all proper applicants and in the United States without cost. The Alien Property Custodian sold to the foundation approximately 4,500 patents for the sum of $25,000. The balance of the foundation's capital was designed as working capital to be used primarily to prosecute infringements by prospective German importers. Surplus was to be used for the retirement of preferred stock and for the advancement of chemical and allied science and industry. The president of the foundation was Francis P. Gowan who had directed the investigation of the chemical industry for the Alien Property Custodian.

II. REENTRY OF FOREIGN INTERESTS

1. *Participation by the Swiss.*—The early post-war period witnessed increased activity in the United States by Swiss manufacturers of dyestuffs. Although the Swiss have been dependent on other countries for coal and other mineral substances used in the production of dyestuffs, the development of the industry

Digitized by Google

in that country paralleled on a smaller scale that of Germany and prior to the war Switzerland ranked second to Germany as a dye producer with 90 percent of its production going into the export market. Scarcity of German colors and raw materials during the war aided Swiss industry. After the close of the war in 1918, the three leading Swiss firms, Society of Chemical Industry in Basle (Ciba), Chemical Works formerly Sandoz, and J. R. Geigy, S. A., entered into a community of interests agreement (Interessengemeinschaft), whereby they agreed to pool profits according to a certain prescribed ratio, to coordinate their research activities, and trade in foreign countries. It was provided that a central committee composed of representatives of the three companies would direct matters of policy. Exhibit 2 is a rough translation of a copy of this agreement. Shortly thereafter each of these companies organized in the United States for the American and Canadian markets a separate sales organization—Ciba Co., Inc., Goigy Co., Inc., and Sandoz Chemical Works, Inc. The stock of each company is owned by its parent in Basle, except that of Ciba which since 1939 has been held by a trust company holding part of the American interests of Ciba Basle.

In 1920 the three Basle companies organized the Cincinnati Chemical Works, Inc., whose stock they held in the ratio prescribed by the 1918 community of interests agreement (Ciba 52 percent, Geigy 24 percent, Sandoz 24 percent). The three Swiss companies in New York thereafter sold not only products imported from Switzerland but also those manufactured by Cincinnati in accordance with processes and know-how furnished from Basle.

2. *Reentry of German manufacturers.*—The intended results of the tariff and of the establishment of the Chemical Foundation, as directed against the Germans, were largely mitigated early in the post-war period. The foundation issued licenses to Kuttroff-Pickhardt & Co., which had received its business as agent for Badische, to import certain products for which the foundation then held the patents.

In 1919 the stock of the Bayer Co. and of Synthetic Patents Co., which owned Bayer's plant and patents numbering more than 1,200, was sold at auction by the Alien Property Custodian to Sterling Products Co. (Inc.), an American-owned corporation, which had agreed to dispose of the dye plant and patents to the Grasselli Chemical Co. The purchase price was $5,310,000, plus back taxes and other accumulated obligations which aggregated more than a million dollars.

The year 1923 marked the beginning of overt activity in the United States by German interests. In that year negotiations were begun between the German Bayer Co. and Grasselli Chemical Co., which had acquired the plants and property of Bayer from Sterling Products, Inc., and had in fact employed the personnel of the pre-war Bayer Co. for the establishment of a jointly owned company in the United States. In an agreement dated May 12, 1924, which I submit as exhibit 3, the purpose of the new company was stated in section 1 (b) to be "to build up, promote, and develop the dye industry in the United States and to manufacture such dyes, intermediates, etc., as can be manufactured in the United States to its advantage and profit, and to purchase and sell said products in such cases where same can be done to the greater advantage of the new company than its own manufacture thereof."

Grasselli Chemical agreed to convey to the new company all its dyestuff properties, inventories, and manufacturing rights in the United States and Canada; Bayer agreed to assign its present and future American patents and trademarks, to furnish such technical staff and technical assistance in training new employees as should be necessary, and to grant the sale and exclusive right to import and sell in the United States and Canada products manufactured by it. The new company, however, was to be restricted in its sales to "the United States, its territories, and Canada," and only with Bayer's subsequent approval could it engage in export activities. It could not engage in the manufacture and sale of heavy chemicals, "other than those and to the extent which it needs in the conduct of its business and which G (Grasselli) is not in a position to manufacture and supply." Grasselli Chemical was to receive 51 percent of the stock of this company, but the holdings of the parties were to be equalized when bonds in the value of $3,250,000 which Grasselli Chemical was to receive in change for property, plant, and equipment, should be liquidated. And both parties agreed not to invest in or support any other company in the United States which would compete with the proposed company.

Digitized by Google

A letter from Bayer to Grasselli Chemical dated May 14, 1924, which I introduce as exhibit 4, confirmed oral authorization to incorporate the new company under the name of the Grasselli Dyestuff Co. This company was to start business July 1, 1924.

On June 17, 1924, Bayer, Grasselli Chemical, and Grasselli Dyestuffs entered into a new agreement which contains substantially the same provisions as the agreement of May 12. Grasselli Dyestuff, which had been incorporated under the laws of Delaware since the previous agreement, was designated to engage "in the manufacture, purchase, and sale of dyestuffs, intermediates, and organic chemicals * * *." The contributions of Bayer and Grasselli Chemical were recited and the same restrictive provisions and financial arrangements contained in the earlier agreement were incorporated in this one, which I introduced as exhibit 5.

By the addition of Hoechst, another German manufacturer, to the agreement on March 3, 1925, an additional measure of German control was achieved. By that agreement 30 percent of the stock of Grasselli Dyestuff was to be allotted to this company, which provision would ultimately have had the effect of reducing the interests of Bayer and Grasselli Chemical to 35 percent, respectively. A supplemental agreement executed the same day provided for the organization of a new corporation to take over the sales of Grasselli Dyestuff. These agreements of March 3, 1925, constitute exhibit 6.

A short time later, on July 31, 1925, a group of eight German manufacturers then organizing I. G. Farbenindustrie entered the American scene. Another agreement was executed, and the parties thereto were Grasselli Chemical, Grasselli Dyestuff, Herman Metz, Bayer Hoechst, and the so-called German manufacturers. This agreement, although terminating and canceling that of March 3, 1925, was regarded by the parties as a modification of the earlier contract of June 17, 1924, and the provisions of the earlier agreement were therein amended to conform to this one. This contract may be regarded as the basic contract by which future conduct of the parties has since been regulated.

Hoechst and the manufacturers granted to Grasselli Dyestuff * * * "the sale and exclusive right to manufacture in the United States of America (its territories) and Canada, * * * dyestuffs, intermediates and organic auxiliary products but intermediates and auxiliary products only insofar as being products, that are chiefly employed in the manufacture of dyestuffs and colors. * * *"

However, Hoechst and the manufacturers agreed to furnish auxiliary and intermediate products for Grasselli Dyestuff's own use but not for resale. Grasselli Dyestuff also received the right to manufacture in the same territories (1) bichromates, (2) chrome oxides, (3) chrome salts, and (4) all other chrome tannery agents. Certain products listed were excepted from this general grant.

Hoechst and the manufacturers agreed also to give Grasselli Dyestuff the exclusive benefit of all their research, inventions, technical and practical experience, etc.; to furnish trained employees and otherwise instruct Grasselli Dyestuff's employees; to assign present and future Canadian and American patents and patent applications relating to these products; and further agreed that, "during the corporate existence of (Grasselli) Dyestuff, they will not manufacture in the United States of America, its territories and Canada, said products, or invest in or support, directly or indirectly, any company, organization, or individual engaged in the United States of America, its territories, and Canada, in the manufacture of said products (par. 5)."

Grasselli Dyestuff agreed (sec. 8) "to confine its manufacture and sale of said products to the United States of America, its territories and Canada." And this restriction might be waived by the parties only if Grasselli Dyestuff, Hoechst, and the manufacturers agreed that such waiver would "be of advantage to all of them."

Hoechst and Metz were to receive 30 percent of the stock of Grasselli Dyestuff, with an appropriate distribution by Hoechst to the manufacturers as their interests appear. The effect of this provision was to reduce American participation through Grasselli Chemical to 35 percent.

Provision was made for the establishment of a new selling organization in the United States. Furthermore, inventions by Grasselli Dyestuff were to be exploited by that company in the territories allotted to it; in Germany, by Bayer, Hoechst, and the manufacturers, "as they may determine." The latter group

Digitized by Google

was also to apply for patents in Germany, but Grasselli Dyestuff would obtain 50 percent of the profits on sales for German consumption and total profits on sales by Bayer, Hoechst, and the manufacturers elsewhere.

Also, on July 31, 1925, Grasselli Chemical and Bayer entered into a new profit-sharing agreement. Therein Bayer agreed to pay Grasselli Chemical 12½ percent (10 percent if Badische entered the agreement, which that company did do on December 1, 1925, exhibit 8) of profits gained by Bayer, Hoechst, and the manufacturers in exporting to the United States, its Territories, and Canada, any of the products within the scope of the principal agreement. Grasselli Chemical agreed to pay sums so received above $150,000 per year to Bayer for the benefit of Bayer, Hoechst, and the manufacturers, until a total of $750,000 has been paid.

These agreements of July 31, 1925, are introduced as exhibit 7.

The new selling company, General Dyestuff Corporation, was incorporated in 1925 and its stock was allotted one-third to representatives of Grasselli Chemical, one-third to Metz, previously identified as American agent for Hoechst, and one-third to Kuttroff-Pickhardt & Co., agent for Badische. General Dyestuff absorbed the sales organizations of the concerns represented by the shareholders; in this manner the sales representatives of the German companies forming I. G. Farben were consolidated into a single unit in this country. Shortly after the formation of this company, the stockholders granted options on their shares to I. G. Farben, which options continued until sometime in 1939. Although the beneficiary was changed from time to time after 1933, each beneficiary was controlled by I. G.

The organization of General Dyestuff and the creation of the options is described in a statement by E. K. Halbach who has been president of the company since 1930, which I introduce as exhibit 9.

By December 1925 the organization of I. G. Farbenindustrie in Germany had been completed (exhibit 10). On January 1, 1926, I. G. entered into a contract with General Dyestuff (exhibit 11) designating the latter its exclusive selling agent in the United States, including its Territories (General Dyestuff was also selling agent for products manufactured by Grasselli Dyestuff).

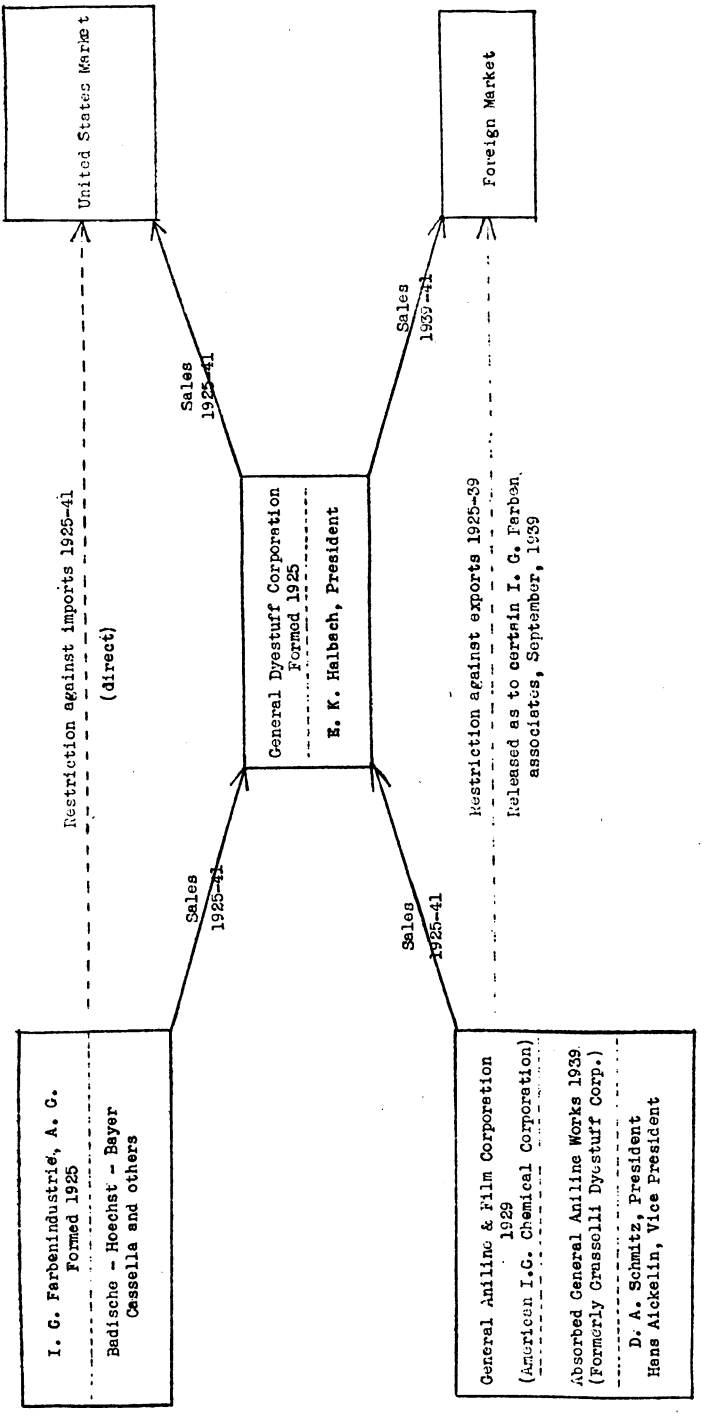
Thus, within the short space of less than 3 years, the now consolidated German interests were in control of 65 percent of the stock of Grasselli Dyestuff (manufacturing company), and active in the control and management of General Dyestuff (selling company) which was restricted from competing with I. G. outside of the United States. This pattern continued to be substantially the same until the outbreak of the present war. However, its framework was slightly altered from time to time, generally with the result of increasing German control.

On October 20, 1928, Grasselli Chemical was eliminated as a party to the agreements of July 31, 1925, but in a contract executed on this date between I. G. and Grasselli Dyestuff all rights and obligations of Grasselli Dyestuff under these preexisting contracts were ratified, confirmed, approved, and regranted (exhibit 12). On October 23, 1928, Grasselli Chemical sold its assets to E. I. du Pont de Nemours & Co.; H. A. Metz gave Grasselli Chemical three notes for $500,000 each in payment of Grasselli Dyestuff's obligations to Grasselli Chemical, and the latter relinquished to Metz all its remaining interests in the dyestuff field, including its General Dyestuff stock, Grasselli Dyestuff stock, its patent rights, etc. This transfer gave Metz control of two-thirds of the stock of General Dyestuff, and a substantial block of Grasselli Dyestuff stock, which ultimately was acquired by I. G. Farben, thus yielding to the German interests complete control of that company.

In the following year, 1929, Grasselli Dyestuff changed its name to General Aniline Works, Inc. In April 1929, Herman Schmitz, acting in behalf of I. G. Farben, of which he was financial director, organized American I. G. Chemical Corporation, to which shortly thereafter was transferred the stock of General Aniline Works. In 1939, the name of General Aniline Works, Inc., was changed to General Analine & Film Corporation, which was absorbed into American I. G., the merged corporations adopting the new corporate name, General Analine & Film Corporation, and General Aniline Works became the dyestuff manufacturing division of the new unit.

The following chart depicts the nature of the restrictions imposed and the relative positions of the parties to the agreements discussed:

Digitized by Google



Digitized by Google

The German and Swiss interests have for sometime constituted approximately 40 percent of the American dyestuff industry. From the time of their respective organizations until recently their sales policies and business conduct have been determined and controlled by their affiliated companies in Europe, namely, I. G. Farben and the Swiss. Until the outbreak of the present war in 1939 none of these companies was permitted to, or did in fact sell, dyestuffs in markets of the world except the United States and Canada. Thereafter, as I shall discuss more fully at a later point, they exported dyestuffs to certain markets in accordance with permissions received from their affiliated companies in Europe.

III. TREND TOWARD CONSOLIDATION AND CARTELIZATION

1. *Rise of dominating interests within particular countries.*—Largely because of the acute competitive situation which had developed as a result of the war, a trend toward consolidation of producing companies in particular countries began to take place; this, in turn, had its counterpart in a movement toward cooperation among the dominant concerns in these countries.

In Germany the movement toward consolidation which had begun to take place even before the war, finally culminated in 1925 in the amalgamation of the principal dyestuff and other chemical interests into I. G. Farben. In Switzerland, in 1918, the major dyestuff manufacturers, Ciba, Sandoz, and Geigy entered into the community-of-interests agreement previously described, which provided for an allocation of markets, pooling of profits, and exchange of technical information. In Great Britain, after the war, the British Dyestuffs Corporation had absorbed the principal dyestuff manufacturers; in 1926 this company merged with other dominant chemical firms into Imperial Chemical Industries, Ltd. In France, Etablissements Kuhlmann had assumed the leadership of the dyestuff industry and exercised control over other manufacturers.

This movement toward consolidation and merger within particular countries also characterized the United States market. In the period 1919–29 the number of domestic dyestuff establishments was reduced from 90 to 49, and a large part of the dyestuff business had come under the control of a few large manufacturers. In addition to General Aniline and the Swiss companies, three domestic producers rose to positions of dominance: Du Pont, National Analine & Chemical Co., which was a wholly owned subsidiary of Allied Chemical & Dye Corporation, and the Calco Chemical Co., which was acquired in 1929 by American Cyanamid Co., under which it became an operating division. Numerous other companies manufactured dyestuffs on a small scale but were not in a position to exert much influence on the market. Likewise, the number of intermediate manufacturers had diminished, and the majority of these products began to be produced by a few large companies. Allied Chemical and American Cyanamid, through National Aniline and Calco, respectively, became important producers; in addition, Monsanto Chemical Co., the Sherwin-Williams Co., and the Dow Chemical Co. occupied strategic positions in this field. General Aniline and Cincinnati Chemical, which supplied the Swiss companies, manufactured intermediates primarily for their own use.

The domestic picture will be further analyzed at a later point in the discussion, but the significance of this trend toward consolidation is now noted.

2. *Development of the cartel movement.*—In the period 1920–28 discussions and negotiations continually took place among the principal dyestuff manufacturers in Europe, and between these dominant European interests and companies in the United States, for the purpose of eliminating competition among themselves in world markets. The formation of I. G. Farben, of I. C. I., and of Kuhlmann, together with the emergence of certain dominating companies in the United States, facilitated the undertaking of far-reaching agreements.

3. *Du Pont–I. G. Farben.*—In the early post-war period there were certain preliminary efforts to bring about cooperation between du Pont and the predecessor companies of I. G. Farben and also with British Dyestuffs Corporation, which later became a part of I. C. I. On June 20, 1922, Jasper E. Crane, European manager of du Pont, wrote F. W. Pickard, vice president of du Pont, in Wilmington, summarizing discussions which he had had with officials in England. This letter, which I introduced as exhibit 13, states in part:

"The above, together with the numerous articles in the newspapers about the British Dyestuffs affairs, has made me convinced that it is a very propitious time to negotiate with the British Dyes. They may be far behind us in technical information, but undoubtedly have a good deal of valuable knowledge, while their negotiations with the Germans may result in developments

Digitized by Google

that will be important to us. If, therefore, you can spare the time, I think it most desirable for you to come over to London. Possibly if you can come, you will be here when Mr. Haskell is here, and I hope that you will not have to delay your visit much later than the early part of July."

In a letter written December 17, 1926 (exhibit 14), Wendell R. Swint, a du Pont executive in Wilmington, described to Crane the amalgamation of the dominant British chemical companies into I. C. I.

"When Sir Harry (referring to Sir Harry McGowan) was in New York he met Sir Alfred Mond there, and in the course of a couple of hours' conversation, these two had reached practical agreement to consolidate the British Chemical industries into a single company. The details of this agreement were arranged shortly after the return of Sir Harry to London, with the result which you now know. While in New York, Professor Bosch (of the I. G.) was informed of the proposed amalgamation, and expressed himself as extremely well pleased, and it was arranged that he would stop off in London on his return to Germany.

"Sir Harry explained * * * that the formation of I. C. I. is only the first step in a comprehensive scheme which he has in mind to rationalize chemical manufacture of the world. The details of such a scheme are not worked out, not even in Sir Harry's own mind, but the broad picture includes working arrangements between three groups—the I. G. in Germany, Imperial Chemical Industries in the British Empire, and du Ponts and the Allied Chemical & Dye in America. The next step in the scheme is an arrangement of some sort between the Germans and the British. He appreciates fully, or at least he says he does, the supreme difficulty in the way of the final step, namely the personality of the management of the Allied Chemical & Dye. In spite of this, he is hopeful that a satisfactory arrangement can be come to."

Durng the period 1927–29, du Pont negotiated continuously with I. G. Farben for the establishment in the United States of a jointly owned dyestuff company which would protect and advance interests of both parties in the United States. During the summer of 1927, Lammot du Pont, then president of du Pont, made a trip abroad with Irênê du Pont and Crane, and in a report to the executive committee, dated August 22, 1927, (exhibit 15), reported the nature and results of his discussions with officials of I. C. I. and I. G. Farben. Concerning negotiations with the Germans, the report states in part:

"On August 1st we met Dr. Bosch at his residence in Heidelberg. There were also present, Doctors Schmitz, Gaus, Abel, and Von Kniernien. Dr. Bosch readily agreed on the desirability of cooperation between the I. G. and du Pont Company, if a satisfactory plan could be found. He explained at considerable length Germany's need of exports and the desirability of the American market for this purpose. He fully recognized the effect and availability of the American tariff. I judge that, if any arrangement was to be made between us, a recognition of the importance of German exports to America would have to be part of it. We discussed the various branches of our business and gave our views on each, which views seemed rather favorably received, and we were asked to submit a definite plan on each branch. This was done and presented at a later meeting, at which the suggestions on each branch were discussed and explained. Dr. Bosch asked for copies of these suggestions in writing and time to go over same with his associates. Copies were accordingly furnished him, as per attached memorandum" (exhibit B).

These general principles of cooperation submitted were the following:

1. The purpose of the proposed cooperation is to promote existing business, encourage development of existing lines, and encourage invention or discovery of new products and processes.
2. Each agreement or joint effort must be such as to benefit both partners.
3. Desirability of imports to America of German-made goods is recognized, but will not be encouraged if, (*a*) business is already covered by American manufacture, (*b*) import to America seems to stifle or hamper an American key industry.
4. In every case American business must be controlled and managed by American partners.

Specific proposals relating to dyestuffs were the following:

1. Du Pont will separate its dye dept. from other branches.
2. Du Pont dye dept. and General Dye Corp. (All of the I. G. controlled dye business in America) will be consolidated on basis of appraised values.

Digitized by Google

3. An effort will be made to consolidate above with Grasselli Dyes and/or Sterling Products on appraisal basis into "American Dyes."

4. "American Dyes" will issue stock for cash for its development and expansion and I. G. will have preferential right to subscribe until du Pont will have not less than 60%.

5. "American Dyes" will receive free all future improvements, useful processes and technique from its stockholders, but will not be bound to cede new discoveries to du Pont or I. G.

6. If it is profitable and good business, and so far as is consistent with the maintenance of a self-contained organic chemical industry in U. S. A. and a school for technical advance, American Dyes will import from Germany and sell in America.

7. Development and expansion of American Dyes will be governed absolutely by its board and this will be controlled by du Pont Co.; I. G. will have representation proportional to stock holdings.

The principal issue arising from these negotiations was control of the new corporation which ultimately proved an insuperable obstacle. To du Pont's demand for 51 percent control, I. G. responded:

"(Par. 4.) I. G. suggests a 50/50 stock ownership so that they would have a veto power as to expansion, export, and prices, and thus be able to protect their world markets against American competition. We did not agree to this and stood firm that such an arrangement would be impossible. In connection with this proposition, the I. G. suggested the desirability of taking in the Allied Chemical & Dye Corporation. We gave it as our opinion that this was impossible on account of the Sherman Law. They also suggested that it might be desirable to take in the Cyanamid Company.

"Dyes: The I. G. had no criticism of our suggestions, but stated that they must take the matter up with their American associates first before giving any answer. We understood that they had in mind Grasselli, and offered to approach Grasselli, with whom we are on friendly terms, but were requested to allow them to take the matter up first. In this connection, Dr. Bosch suggested the desirability of taking in the Swiss Company in America.

In December 1927 Pickard made a trip abroad and held numerous conferences with officials of I. G. Farben. The I. G. further again emphasized its desire for equal participation in the new company. In response to Pickard's cabled request for further instructions. Harrington cabled (exhibit 16): "Think we should insist upon du Pont having absolute control of the combined companies, except guaranties protecting minority interests * * *" These guaranties referred to German participation in management, financial structure, and scope of the company's activities.

The negotiations continued during the next year. Early in 1929 Swint and Pickard held further discussions with Messrs. ter Meer, Greif, and Waibel of the I. G. In a letter from Pickard to Harrington, January 14, 1929 (exhibit 17), Pickard reported:

"Later on they (the I. G. representatives) suggested a possible compromise in the form of du Pont 51%–I. G. 49% with an option to I. G. (perhaps 10 years) on 1% of the stock, which if and when exercised would result in 50–50 ownership. They stated this was their own idea, not proposed to their board, but one they would recommend for favorable action.

"Their idea, they said, was with such an option we could not and would not act in important matters without consulting them, but that it was not their idea to exercise the option unless a very serious disagreement arose.

* * * * * * *

"Their pride as the leading dyestuff manufacturers and developers is undoubtedly hurt by our demand for control, and I judge there is no chance of changing their minds on that point. They feel however that the option mentioned would salve over that feeling.

* * * * * * *

"I think I can safely say that we must consider this arrangement seriously or give up all idea of a German alliance.

"You will appraise more accurately than I can do the strength of their argument that they can control the U. S. market eventually on the more expensive and profitable lines of dyes—bearing in mind the production of new and patented types, and their strong technical position in the production of pure intermediates.

* * * * * * *

Digitized by Google

"I am not making any recommendation but I think the proposition worthy of serious consideration."

To this letter Harrington replied by cable, January 29, 1929 (exhibit 18):

"Glad (to) note concession already offered but feel we must stand firm on control thereof. We are willing (to) offer any reasonable concession (to) protect minority interest which does not involve control. Anxious (to) deal if possible * * *"

On April 15, 1929, there was another meeting between representatives of du Pont and I. G. Farben in Wilmington, Del. Dr. Bosch, Dr. Schmitz, Dr. Gaus, Dr. Greif, and Mr. Paul Pickhardt, represented the I. G., and Messrs. Lammot du Pont, and Irénée du Pont, F. W. Pickard, and W. S. Carpenter (now president of du Pont) represented du Pont. It was recognized that the issue of control would prevent the two companies completing their plans for the establishment of a jointly owned subsidiary and with respect to this matter the report of this meeting (exhibit 19) summarized the situation in the following manner:

"Mr. Pickard told J. K. Jenney informally that the dye situation in this country had been gone over again, and that the attitude of neither party had changed—i. e. the Germans insisted they must have at least 50% of the proposed American Company, while du Ponts insisted that for national reasons they must have 51%. It was therefore recognized that nothing further could be accomplished along these lines at least for the present. It was agreed that the Sales Departments of the two companies should establish as frank and friendly relations as possible."

That this friendly cooperation has continued to exist is evidenced from a report of a meeting between representatives of the I. G. and of du Pont at the home of Lammot du Pont on October 22, 1935 (exhibit 20). A summary of this meeting prepared by one of the I. G. delegates states:

"We pointed out in particular * * * that an amicable cooperation existed in the field of dyestuffs, consisting on the one hand of understandings about foreign markets, and on the other of amicable settlements of all patent litigation in the U. S. A. We further called to their attention that there had been a uniform sales policy and that the General Aniline Works had made big purchases from du Pont of heavy chemicals and intermediate products. * * *"

A report entitled "Investigation of Patent and Processes Situation Respecting du Pont and the I. G." prepared March 18, 1936, also refers to these cooperative endeavors (exhibit 21).

"Present methods of handling I. G. Contracts:

* * * * * * *

"In the last few years du Pont-I. G. relationships have notably improved, due partly to the personalities of individuals entrused with negotiations and partly to an officially more friendly attitude from higher up in the I. G. organization. Also it is said that I. G. now wishes to put its patent office operations in this country on a profitable basis through a liberal policy in granting licenses.

"Various informal contacts and the cementing of more cordial relations have been achieved through the London Office but all actual patent licenses and agreements have been worked out with I. G. in New York.

"Orchem. (which refers to the Organic Chemical Division of du Pont), has been notably successful in dealing with Mr. Duisberg and the I. G. patent firm of Hutz and Joslin in New York City. In the last three years some 42 licenses have been negotiated and interferences settled and these things are now more or less taken in their stride with the important and unimportant items all being run through the mill together. Messrs. Holmes of Orchem. and Brownell of the legal department, have achieved excellent results in their handling of this situation."

* * * * * * *

Fields where general agreements or understandings exist—patents in general:

"The I. G. and du Pont (the general heading of this section is "Patents in General")—The I. G. and du Pont have an informal agreement that when we have German patents which seem to us might be profitable exploited in Germany, and when these patents cover subjects on which we have no prior commitments or moral obligations to discuss with anybody else, we will bring them first to the attention of the I. G. and they will do the same for the United States. There is a letter from Dr. Ewing to Dr. ter Meer, (whom we have previously identified as associated with the I. G.) dated July 5, 1935, to this effect."

Digitized by Google

This policy of cooperation is further indicated in a letter dated July 7, 1937 (exhibit 22), from J. E. Kupperian, control division of du Pont, to Henry E. Ford, manager, London office:

"As you perhaps know, it is our policy, as far as possible to settle patent conflicts with G. A. W. by agreement. It so happened that at the time the question of this patent came up, we had also a number of other patents up for consideration, that is patents that we own under which G. A. W. desired a license, as well as patents owned by G. A. W. under which we desired a license. As as part of the whole settlement, we have drafted an agreement giving G. A. W. a royalty-free, nonexclusive license under the I. C. I.'s patent and are attaching two signature copies for execution by I. C. I. if they are agreeable to grant the license suggested."

In a letter dated December 2, 1937 (exhibit 23), from F. B. Holmes, assistant chemical director of du Pont to C. A. Grasselli in du Pont's London office, a prospective agreement between du Pont and General Aniline Works is discussed in the following terms:

"We have had considerable discussion on the question of possible exchange of information between ourselves and G. A. W. and also on the question as to whether free licenses should be given by one party to the other only under patents covering inventions made prior to the present time or whether these licenses should also extend to patents on inventions made by one party or the other during the life of the agreement.

"It occurs to us that both I. C. I. and the I. G. would perhaps be quite willing that we and G. A. W. should see the I. C. I./I. G. agreement. We would appreciate it if you would talk with I. C. I. in order to ascertain whether they would have any reason to object to our seeing the agreement. If there is any reason who we should not see it, we, of course, would be quite satisfied, but there might be some advantage in knowing the extent and terms of that agreement and perhaps in drawing our own agreement with G. A. W. along similar lines so far as it seems practical, especially in view of the current exchange of information between ourselves and I. C. I."

It is a fair inference from this summary of the trend of commercial relations between du Pont and the I. G. that despite their failure to consummate successfully their negotiations respecting the establishment of a separate company to further their interests in this country, both organizations cooperated extensively with each other. Naturally cooperation by I. G. in this country was carried out by General Aniline, I. G.'s representative in the United States, as will become increasingly apparent in subsequent portions of this statement. Collaboration in the United States was merely an aspect of cooperation between I. G. and I. C. I. in other parts of the world. It was with I. C. I. that du Pont made its most effective and binding agreements and it is to the relationship existing between these two companies that I now turn my attention.

4. *du Pont–I. C. I.*—During the early post-war period, du Pont negotiated and conferred with I. C. I. with the ultimate objective of a far-reaching understanding respecting exchange of technical information and territorial allocations. Both I. C. I. and du Pont indicated the desirability of including I. G. Farben in any agreement that might be reached.

In the course of Lammot du Pont's European trip in 1927 to which I have previously referred, serious negotiations were entered into with representatives of I. C. I. as well as those of I. G. In his report on this trip (previously introduced as exhibit 15), Lammot du Pont made the following reference to the beginning of these negotiations:

"* * * I took up with Sir Alfred Mond and Sir Harry McGowan (chief officials of I. C. I.) the question of whether the extension of the patent and process agreement between Nobel and du Pont to the other branches of I. C. I. was satisfactory. Both these gentlemen seemed very favorably inclined toward such extension and stated definitely that it was satisfactory to the I. C. I., provided it did not prove to be detrimental to their current negotiations with the I. G., and provided the territorial arrangement was satisfactory. On this point I gathered that they want the British Empire as their territory against United States of America as our territory, and the rest of the world free except where commitments had already been made. This conversation was an expression of opinion on both sides without commitment."

On February 18, 1928, a meeting was held in Lammot du Pont's office at which was discussed the agenda for a meeting with I. C. I. representatives. The minutes of this meeting (exhibit 24) contains the following passage:

Digitized by Google

"Dyestuffs Department

"Extension of Patents and Processes Agreement.—Any arrangement on dyes must recognize the I. G. The ideal situation with respect to that company, would be to be let alone:

"1. Germans to refrain from substantial American investments.

"2. Germans to refrain from attempt to break down U. S. Tariff.

"3. Cooperation in export markets.

"4. A Patents and Processes Agreement would be advantageous to us.

"Alternate but less desirable arrangement: Formation of American partnership, to be controlled absolutely by du Pont.

"Stumbling blocks to I. C. I. agreement:

"1. Path to future arrangements with I. G. must not be barred. I. C. I. probably just as interested in this point as we."

These considerations were urged at a meeting of the representatives of I. C. I. and du Pont in Wilmington on March 6, 1928. Subsequent conferences and negotiations took place. The problem of fitting the I. G. into the general picture was quite serious. Finally it was solved at a meeting between Sparree and Sir Harry McGowan in London which was reported in a letter to Lammot du Pont dated May 30, 1929, as follows:

"I saw Sir Harry (McGowan) privately in regard to the I. G. dyestuffs situation and explained to him that the situation in the United States relative to I. G. is so important that we had to be very careful not to commit us to any arrangement of any kind which might prevent us at some later time from clearing up the I. G. dyestuffs situation in America. I mentioned the several alternate ways of handling the subject, and he took a very reasonable attitude, eventually accepting as the best solution the I. G. reservation given in your cable and which is the same as contained in the first page of Mr. Carpenter's letter of May 17th."

* * * * * * *

"However, after he had turned the suggestion over in his mind for awhile, the idea seemed to find favor with him and in particular will be much more satisfactory than to leave dyestuffs entirely out of the agreement. On account of the I. C. I. several commitments now in the dyestuffs field, they are, of course, not in a very good position to argue that du Pont shall be bound to them on dyestuffs, and I feel that this I. G. reservation will be accepted by I. C. I."

Finally, on July 1, 1929, these extensive negotiations resulted in the conclusion of an agreement acceptable to both parties (exhibit 25). The duration of the agreement was set at 10 years. The agreement provided in article I for an exchange of information:

"In respect of all patented or secret inventions now or hereafter during the life of this agreement owned or controlled by it, relating to the products herein specified, sufficient to enable the other party to determine whether it desires to negotiate for licenses covering any or all of such inventions."

In article II I. C. I. agreed to grant to du Pont sole and exclusive licenses relating to the products specified, which included dyestuffs, "within the countries of North America and Central America, exclusive of Canada, Newfoundland, and British possessions, but otherwise inclusive of the West Indies." Du Pont agreed to grant to I. C. I. similar exclusive rights "within the countries of the British Empire, inclusive of Egypt but exclusive of Canada and Newfoundland." It was further agreed that each of the parties would grant to the other nonexclusive licenses within any and all other countries not within the exclusive territories specified.

Article III enumerates the products to which the agreement applied. Section (h) of this article relates to dyestuffs and contains special provisions concerning business in India and relations with the I. G.

> (1) while it is recognized that India, as coming within the British Empire, is the exclusive license territory of I. C. I., nevertheless, as an exception, it is agreed that, owing to the exceptional conditions obtaining in and the circumstances appertaining to that market, the dyestuffs activities of du Pont in India may continue until such time as may be mutually agreed upon by the Presidents of the two companies, and that in determining the amount of compensation to be paid by I. C. I. under such licenses, due consideration shall be given to the extent of du Pont's activities which are thereby terminated in such territory;

Digitized by Google

(2) the provisions of this agreement shall not apply to tetra-ethyl lead, but licenses with respect to said product may be the subject of separate negotiation;

(3) while inventions relating to dyestuffs and their intermediates are included in this agreement and subject to the provisions hereof, it is mutually agreed that, due to the exceptional conditions of said industry and the tentative negotiations during recent years with I. G. Farbenindustrie A. G., either party shall be free at any time to enter into separate agreement or arrangement with the latter company covering said industry. Upon the execution of such agreement or the entering into of such arrangement, this agreement insofar as it relates to the dyestuffs industry shall cease and terminate; provided, that all licenses theretofore granted under the terms of this agreement shall continue during the period for which granted, but all exclusive licenses so granted by each shall automatically become nonexclusive. Each of the parties agrees, however, that in negotiating or upon entering into such an agreement or arrangement with said I. G. Farbenindustrie A. G., it shall use its best efforts to extend same to include the other party hereto.

Other articles of the agreement relate to the obtaining, granting, and protection of licenses and sublicenses, arbitration, etc.

On September 15, 1931, du Pont and I. C. I. entered into an agreement by which du Pont transferred "all of du Pont's assets located in the Empire of India relating solely to dyestuffs and related products * * *" in exchange for all of the issued and outstanding capital stock of Dyestuffs Corporation of America which was wholly owned by I. C. I. and was engaged in the purchase and sale of dyestuffs in the United States. This agreement is submitted as exhibit 26.

When I. C. I. entered into an agreement with I. G. in 1931 by which it became a member of the European dye cartel, it informed du Pont that the agreement with I. G. would not affect its (I. C. I.'s) relations with its American partner. This is so stated in a cable from du Pont's representative in London to Wilmington, December 3, 1931 (exhibit 27).

Although du Pont and I. C. I. commonly referred to their 1929 agreement as a patents and processes agreement, it was plainly their intention to include products of all types within its scope. Each party scrupulously respected the exclusive territorial jurisdiction. At times certain areas belonging to one of the parties would be leased for a period to the other. For example, a letter from I. C. I. to du Pont, January 12, 1938 (exhibit 28), indicates that the companies had leased certain territories to each other for that year.

Even before the agreement of July 1, 1929, had been executed, du Pont and I. C. I. had agreed upon using a jointly owned company for the advancement of their mutual interests in Canada. This company was Canadian Industries Ltd. (C. I. L.). Until 1936 the relations of du Pont, I. C. I., and C. I. L. were not governed by any formal agreement but by minutes of meetings of their representatives and exchanges of correspondence. Minutes of a meeting dated October 12, 1928, referred to the policy of I. C. I. and du Pont relative to the Canadian market in the following language:

"(1) *C. I. L.—Policy of principals relative to new products.*—It was agreed in principle that I. C. I. and du Pont desire to cooperate to the maximum degree insofar as practicable in any venture involving the manufacture and/or sale of a product in which either or both principals are interested insofar as such venture wholly involves Canada and insofar as the products manufactured and/or sold are destined for Canadian consumption, and recognize Canadian Industries Ltd. as the proper vehicle for such cooperation. On the other hand, they also recognize that there may be individual cases where the interests of the principals may be better served by other procedure. To provide for such contingencies it was agreed that neither principal is obligated to turn over its business in any individual product against its best interests nor will either principal turn over any venture to C. I. L. contrary to the wishes of the other.

"Both principals agree to inform C. I. L. in advance of any plans made by either relative to the manufacture and/or sale of a product in Canada so that C. I. L. may have an opportunity to convince the principal in question that it is practicable for C. I. L. to undertake the venture.

"This Minute supercedes the Minute on this subject of April 7th, 1919 excepting that the principle that the transfer of each such business is to be effected on

Digitized by Google

terms to be arranged and is to have regard to the good will existing therein continues to be recognized."

This minute is introduced as exhibit 29.

At subsequent meetings on September 9, 1930, and December 4, 1930, the policy to be pursued by the three companies was further clarified (exhibits 30, 31). It was subsequently determined that it would be advisable from the standpoint of du Pont to incorporate these various informal arrangements in a formal document. In a letter dated April 14, 1936, from C. E. Young, of du Pont, to G. W. White, of I. C. I., the reasons were stated in the following manner (exhibit 32):

"The reason for the setting up of the present triparty agreement is the claim by the du Pont Company that it is necessary for them, for legal purposes, to depart from the old method of operation by interpretation of minutes and old agreements and to set up a new document which will cover all previous minutes, letters, and agreements, and delimit the rights of the three parties concerned."

The existing arrangements between du Pont, I. C. I., and C. I. L. were incorporated in a formal agreement dated December 1, 1936 (exhibit 33), which provided for the transfer of the Canadian rights of I. C. I. and du Pont to C. I. L. This consisted of the grant of exclusive rights to practice any and all inventions owned or controlled by I. C. I. and du Pont relating to the products covered by the agreement within the Dominion of Canada and Newfoundland. In exchange therefor C. I. L. granted to du Pont and I. C. I. rights to take advantage of inventions developed by C. I. L. in the rest of the world. The license territories of I. C. I. and du Pont were to conform to those established in the 1929 agreement between these companies.

This agreement was continued until its expiration at the end of 1940 without substantial change. A letter dated December 16, 1940 (exhibit 34), signed by W. S. Carpenter, president of du Pont, and by officials of I. C. I. and C. I. L., states that the agreement will be continued on a year to year basis.

On June 30, 1939, du Pont and I. C. I. executed another over-all agreement to replace that of 1929 which was about to expire (exhibit 35). On July 31, 1939, Lammot du Pont issued a letter (exhibit 36) to general managers of all departments concerning the nature of the agreement which he stated "is substantially similar to the previous agreement (as amended by various supplemental agreements)."

5. *Organization of the European dye cartel.*—I have already made reference to the negotiations carried on by the principal dyestuff manufacturers in Europe and to the trends toward consolidation within particular countries, followed by intercountry agreements.

In 1924 a German-Swiss price agreement was reached affecting a small group of dyes. A short time thereafter the Swiss concluded an agreement with the French, the purpose of which was to stabilize the French market which the Swiss had been flooding with cheap dyes. In 1927 an agreement was effected between I. G. Farben and Kuhlmann, the dominating French company, for protection of the home markets of each party, establishment of production quotas, and division of foreign markets. Both I. G. and Kuhlmann continued negotiations for a broader and more inclusive understanding with the Swiss and British interests. (Exhibit 37; excerpt from Deutsche Volkswivt reported in Department of Commerce Circular, April 3, 1928.)

Finally, in 1929, an accord was reached by I. G. Farben, Kuhlmann and the Swiss, who thereafter have been commonly referred to as "the European dye cartel." Representatives of the Department of Justice have been unable to obtain a copy of this cartel agreement, but the Department of Commerce has published reports received from American attachés, trade commissions, and foreign publications into a comprehensive description of the nature and effect of these agreements, in its publication Commerce Reports. Exhibit 38 is a copy of this article, published July 22, 1929, the title of which is "The Dye Cartel and Dye Exports of Five Major Producing Countries." The importance of the agreement is emphasized in the first paragraph of this statement:

"The formal signing of the sales agreement by representatives of dye manufacturers of Germany, Switzerland, and France was one of the outstanding events of recent international activities. This agreement was signed by the three European countries, whose export trade in coal-tar dyes of 1927 accounted for more than three-quarters of the quantity of the world's exports and four-fifths of the value. The significance lies, however, in the fact that the signatures gave permanency to an oral agreement which had been in effect for the past three or

Digitized by Google

four years by enlarging and reducing to writing. In other words, it was the conclusion of negotiations lasting the past five years."

The preliminary negotiations included British interests; however the British were not parties to the final agreement. This was probably because of a lack of adequate centralization in the British industry despite the step in that direction through the organization of I. C. I. and also the insistence of the British that they be permitted to retain a privileged position in sales to the British Empire.

Sometime in 1931, however, as a result of further negotiations I. C. I. became a member of the European cartel and thereafter participated in various arrangements of this cartel respecting quotas and prices. As a result of the inclusion of I. C. I., I. G. Farben agreed to discontinue the sale of dyestuffs in the United Kingdom, I. C. I. informed du Pont that this arrangement would in no way effect its agreement with du Pont (exhibit 27, previously introduced). The annual report of the Society of Chemical Industry in Basle (Ciba Basle) for 1931 (exhibit 40) made the following reference to the cartel arrangements and the inclusion therein of the British:

"The policy followed by our management from the standpoint of creating international cartels for the distribution of sales has proved itself very good, particularly in these critical times, in that the stabilization and the consolidation in the dystuffs business, brought about by the arrangements previously concluded, could be carried through while avoiding useless competition at the time of adaption to the present requirements of the market. We should also mention here that a similar agreement has been concluded between the Continental Dyestuffs Cartel and the most important English dyestuffs producer, Imperial Chemical Industries Limited."

It is further stated in the article from Commere Reports that:

"According to the communiques which have been issued, this agreement does not deal with business carried on in the United States. The elimination of the United States from the market subdivision, according to the continental press, was intentional because of the American trust legislation, because the United States now produces a sufficient quantity of most dyestuffs—particularly synthetic indigo—to permit an export surplus, and because the three members wish to maintain liberty of action there."

The intended effect of the agreement on the American market is also indicated by the reference thereto contained in a list of I. G. agreements extending to the United States, submitted by the I. G. to Dr. Hutz of General Aniline Works in 1936 (exhibit 39):

Parties	Subject matter	Terms relating to United States of America	Duration of agreement
German I. G. Swiss I. G. Centrale des Motiéres Colorantes (C. M. C.)	Dyestuffs Cartel. Three-party agreement. Cartel agreement relates to dyestuffs and auxiliary products in the dyestuff industry.	As regards territory, the agreement covers the entire world with the exception of the U. S. A., however, sales to and exports from the U. S. A. fall under the agreement	Until Dec. 31, 1968.

In view of the control already possessed by the Germans and Swiss over a substantial portion of the American market, the import of the cartel on the United States becomes readily apparent—and significant. General Aniline (and General Dyestuff), by agreement with the I. G., and Ciba, Sandoz, and Geigy (including Cincinnati, their supplier), by agreements with Swiss owners, were already restricted from sales in world markets outside the United States and Canada.

The French have never engaged in the manufacture of dyestuffs in the United States. A letter dated February 25, 1935, from C. A. Rhein of Kuhlmann, to B. A. Ludwig, president of National Aniline & Chemical Co. (at that time a wholly-owned subsidiary of Allied Chemical & Dye Corporation) suggests that this French obstinance was the result of agreements with American producers, by which the latter consented to stay out of France. In this letter (exhibit 41) Rhein suggests that Kuhlmann turns over to National in other countries an amount of business equivalent to that done by National in France. Further:

"This suggestion emanates from the fact that your conferees in the U. S. A., because of our excellent relations with them, refrain from sale in France. On

Digitized by Google

our side, we have until now, renounced any desire to install a plant in the U. S. A. for the manufacture of dyestuffs."

In 1936 Kuhlmann began to import colors into this country through Fulton Dye & Import Co. Apparently the French had been allotted a quota of $300,000. A letter from H. Koechlin, a director of Geigy Basle, to Walter Saenger, vice president of Geigy in New York, dated May 26, 1937 (exhibit 42), suggests the necessity of admonishing Kuhlmann not to exceed this limit.

* * * * * * *

"I should like to use this opportunity to say a word about the separate report concerning the activity of the French group in the United States. There is reason to believe that the Frenchman will not be satisfied with his $300,000. It will be well to follow him from the very beginning and try to exert pressure on him through those channels which are likely to have an influence on him, to wit, our friends on the other side of the Rhine but, above all, du Pont who will be able to exert the strongest pressure on the French if he cares to do so. It will be necessary to speak plainly and perhaps even brusquely, otherwise the people in Paris won't react. This is for your personal information."

In 1940 the French organized in New York Saint-Devis Kuhlmann Saint-Clair Dyestuff Corporation (SKS Dyestuff Corporation), and in an agreement (exhibit 43) executed January 1, 1940, granted SKS the sole right of importation and sale in the United States of "dyestuffs, auxiliary products and organic chemicals for use in connection with dyeing and coloring. * * *" Paragraph 8 (as did par. 8 of the I. G.-Grasselli Dyestuff agreement of July 31, 1925) contained a restriction against sale "elsewhere than within the United States." The French companies were the stockholders of the new company, which imported until the fall of France.

During this period Allied Chemical & Dye Corporation, through its wholly-owned subsidiary, National Aniline & Chemical Co., was expanding its export trade and had commenced to establish itself as the principal American dyestuff company in markets outside the United States. It should be noted in this connection that for the large part of this period a substantial part of the stock of this company was owned by I. C. I.

IV. AGREEMENTS RESPECTING PARTICULAR MARKETS

Beginning sometime in the year 1930, Allied, du Pont, European cartel, and certain Japanese interests entered into agreements allocating quotas, fixing prices, and otherwise controlling the sale and distribution of dyestuffs in Japan, China, India, and other markets. Memoranda of the agreements relating to the Far Eastern markets referred to dyestuffs known as indigo and sulphur black, which constitute the bulk of consumption in these countries.

(Exhibit 44 is a chart prepared several years ago by the Department of Commerce indicating manufacturers in producing countries and cartel participation.)

1. *China.*—In 1931 National began to participate on a formal basis with the cartel in the Chinese market. On February 25, 1931, B. A. Ludwig, president of National, wrote to F. J. Emmerich, vice president of Allied, recommending approval of a contemplated quota agreement. This letter (exhibit 45) states in part:

"It has been determined by comparison of public and confidential figures, that the consumption range of China lies between 60,000,000 and 77,000,000 pounds Indigo 20% paste basis per year, tending strongly to the higher figure as concentrated products come into greater demand.

"Our participation by recommended agreement would be 18% of this market, or, between 10,800,000 and 13,860,000 pounds Indigo 20% paste basis per year.

"The agreement recommended by Mr. Bull (National's representative in China), and concurred in by us, is briefly as follows:

"1. A three (3) year agreement with all competition for our participation of 18% of the market on the following basis.

"2. Monthly review of inventory, sales, and imports by all concerned to control disbursements.

"3. Raise present price of 69 Taels as quickly as circumstances permit to 77½ Taels, all ex-warehouse Shanghai.

* * * * * * *

"As an important corollary to this agreement we will demand and expect prompt adjustment in all prices of miscellaneous colors, including Sulfur Blacks.

Digitized by Google

"We strongly recommend, and desire to cable today, the acceptance of the proposed agreement, particularly as it is our belief that it represents a key agreement not only in China but as favorably affecting our price and poundage participation throughout the foreign territories served by us in competition with I. G."

On February 27, Emmerich indicated approval (exhibit 46):

"Mr. Charles F. Weber and I have discussed the matter with Mr. Ludwig and concur in recommendation now presented, which provides for 18% partitcipation and understatnding that arrangement may be cancelled at end of any year upon 90 days' notice, in line with discussion Mr. Ludwig recently had with Mr. Waibel, I. G.'s representative, who visited Mr. Ludwig en route to China."

On May 22, 1931, J. Fistere, Jr., National's agent in China, wrote to E. R. Ellis, foreign sales manager of National, as follows, enclosing sample of competitive products:

"Under separate cover we are sending you by parcel post 2 oz. samples of each of the following colors (list of samples of products of I. G. du Pont, I. C. I.): These are the official samples submitted to us by the competition for the purpose of determining comparative strengths in connection with a quota agreement. The findings of the Shanghai laboratory are given in a report attached to Mr. Bull's confidential letter No. 22."

In 1932, the Dow Chemical Co., of Midland, Mich., sought to obtain a measure of participation in the Chinese market. Cables received from I. G. Farben and Ciba Basle by Ciba New York in April 1932 (exhibit 48) indicate that the I. G. and Ciba Basle were willing to grant Dow a small quota which would be marketed in China through the cartel, National, and du Pont. Dow's Canadian quota was to be deducted from its China sales. On June 3, 1932, Ludwig wrote Alfred Lichtenstein (exhibit 49), president of Ciba New York, which is agent for Dow dyestuff sales in the United States, confirming its agreement to purchase from Dow for 3 years 18 percent of Dow's allotment in China (18 percent was National's quota in China), this agreement being subject to "the continuation of committee control of the sale of indigo in China." The other participants in the China market apparently bought proportionate shares of Dow's quota.

On May 11, 1933, Guy W. Talbert, general manager of National, outlined in a letter to Ludwig (exhibit 50) a policy respecting China the adoption of which he recommended:

Policy—beyond December 31, 1933

National's participation in China premised on:

Period: January 1, 1934, to December 31, 1936—1 year notice of termination.

Position:

Indigo: Not less than 18% total sales.
Sulfur Blacks: Not less than 17% total sales.
Miscellaneous Colors Only:

Direct Blacks	15.5%
Direct Blues	14.5%
Sky Blues	8.0%

Correction of quota disparity or price to take place within 90 days unless notice of termination is in force.

Prices: To equal former established basic Tael prices converted into China Dollars at the Chinese Government official conversion rate of 1 China Dollar is equal to 71½ Tael Cents.

Special items: * * * (colors listed): Subject to price arrangement only without quota or exchange of figures. Every other color to be "free" as to price and participation, although consideration may be given to prices exclusive of quota.

In general:

1. National will not tolerate deviation from its recognized participation.
2. National will not agree to entry of other domestic suppliers, and stands ready to resist any effort in this direction.
3. Deviation from foregoing will immediately result in application of:

Section (2). Sales to increase poundage beyond current totals to be maintained at market price until that price declines to a predetermined level, approved by New York, individually by color and branch; and

Digitized by Google

Section (3). When price declines to the approved and predetermined price level, we cease aggressive poundage drive and maintain our position through a series of lower prices, each one individually approved before quoting to the trade—

* * * * * * *

It is recommended that the negotiator be supplied with a copy of this policy and submit it when and if required, holding to its provisions whether submitted or not, except when fully developed reasons at New York prompt deviation by New York.

If it is at all possible, our confreres should be supplied with the essential sections of this policy in advance of the proposed meeting, so that practically all points may be ones of agreement when actual contact is made. To that end, a personal letter from you to the known party abroad would undoubtedly head off any claims that might be presented by the representative of our local competitor. Our claims under the policy above are well in line and not at all unreasonable view of our importance and sustained adherence to the accepted method of operation in the territory.

In March 1934, A. C. Lumley, National's representative for the Far East, writing to Ellis (exhibit 51) expressed certain qualms concerning Mitsui's aspirations in the export market. (The Mitsui interests, aided by Government subsidy, had become the dominant Japanese manufacturers of dyestuffs.)

"We must also take into consideration the present general policy of the Japanese government to urge and assist the building up of the export trade of Japan: In order to avoid revolution the government must hasten industrialization; export markets are absolutely necessary to industrialization and the course of the government in urging and assisting exports is, from their point of view, one of urgent necessity.

"We therefore see that every element in the present situation points to an early invasion of the China indigo market by Mitsui.

"They are anxious to build up Japanese foreign trade, they have a surplus of capital to invest, the government favors increase of exports, and Mitsui are actually manufacturing indigo and are able to sell it at a price much lower than the present China market price.

* * * * * * *

"In view of the above elements in the indigo situation, we believe we are justified in drawing the conclusions that a Mitsui invasion of the China indigo market may reasonably be expected soon. Soon may mean, I repeat, within a month and it may mean within a year, and there is no way of telling which, at the present time. But it seems highly probable to the representatives in Japan of all the Cartel firms that Japanese indigo export is coming in the reasonably near future.

"We therefore believe it will be wise to attempt to ascertain the limit of the Mitsui ambitions by meeting them in conference with the avowed object of attempting an amicable arrangement. Mitsui may refuse to enter such a conference; if so, nothing is lost and the fight can begin exactly as it would have begun without any conference proposal. Even if we get Mitsui into a conference, their ideas may be too big and they may demand a share of the world market larger than other indigo manufacturers are willing to give them. If so, again, the fight can begin as if the conference had not been held. On the other hand, there is just the chance that a satisfactory arrangement can be reached and a price war averted, and it is my firm conviction that such a possibility should be investigated."

The necessity of reaching an agreement with Mitsui was apparently realized later in 1934, for on July 18, Ludwig wrote Talbert (exhibit 52), in part:

Since Mitsui is the only Indigo manufacturer, his entrance into the Committee (i. e., Cartel, National, du Pont, I. C. I.) should make the control of prices a much easier proposition than the attempted control of sulphur black prices made by a number of Japanese plants.

"If it is intended to have Mitsui in the Committee on Indigo, it is certainly to Mitsui's and everybody else's advantage to leave the prices undisturbed. Hence our cable to Germany stating this fact. If Mitsui enters the Committee it would be idiotic to reduce prices now, and as their entrance seems assured we may after all, save the situation. All these points will be clear upon receipt of the reply from Germany.

Digitized by Google

Renewal of the China six party agreement for 1937 is indicated in a letter from Lumley to Ellis, May 10, 1935 (exhibit 53):

"A telephone message from Mr. Waibel (I. G. representative) at Tokyo received this morning informs us that the difficulties which were raised by DuPont with regard to the extension of the China six-party agreement to cover the year 1937 have now been overcome.

"This is taken to mean that DuPont are willing to renew the China six-party agreement for 1937 accepting the quota with no increase over 1936."

On November 3, 1938, Ellis submitted to Talbert a report on the China market (exhibit 54). In the area occupied by the Japanese at that time, Japan's average sales for the previous 3 years constituted on an average:

	Sales in occupied area	Percent of total Japanese production
	Percent	
Indigo	11.8	43.4
Sulphur Black	47.0	39.3
All others	19.1	17.7
All items	24.0	33.8

During 1936, National supplied 9.68 percent of the Chinese market; in 1937 this figure dropped to 7.25 percent. Percentages for other participating groups is not included in this report. However, Ellis does indicate a rather pessimistic outlook for the future, at least so far as National is concerned, although the prospect may not be so bad for the I. G. in view of the friendly attitude of Japan toward Germany. He writes:

"The above figures are emphasized because Japan not totally independent of imports of Miscellaneous Colors into Japan proper, and Japan's existing manufacturing capacity in Japan proper is still very inadequate to support Japanese ambition within the occupied Chinese area, regardless of what is undoubtedly a fundamental policy now with the Japanese Government; namely, to consolidate her commercial position in the occupied Chinese area to the exclusion, if at all possible, of foreign manufacturers, with the possible exception of what may be a co-operative plan with the German I. G."

2. *Japan.*—The same type of price and quota arrangements were developed in Japan at about the same time, and by the same parties. Here, however, the rise of Mitsui was felt somewhat earlier with the result that foreign interests were forced to agree to limit greatly their participation. Although reluctant to relinquish this profitable market, there was really no alternatice; besides, it was hoped that by doing so Mitsui itself could be restricted from other markets in the Far East. The result in China has already been observed.

A letter dated March 18, 1931, from A. C. Lumley, representative of National in the Far East, to E. R. Ellis, foreign sales manager (exhibit 55), discussed preliminary negotiations for apportionment of the Japanese market with Herman Waibel, who was a representative of I. G. Farben in the Far East. The letter describes the preliminary negotiations between Lumley and Waibel in which it was decided that the indigo agreement for Japan should "be on a similar basis to that for China," and that the basis for quota allotment should be sales for the years 19273–1929.

To this letter was attached a copy of a memorandum agreement between Waibel, acting on behalf of the Continental Cartel, and Lumley. It was provided that:

"The two parties have agreed to cooperate in the Indigo market of Japan and to divide the total Indigo sales in Japan of the above mentioned Indigo factories on the following basis:

Continental Cartel, 82½% of the total quantities of Indigo delivered and accounted for

National Aniline & Chemical Co., 17½% of the total quantities of Indigo delivered and accounted for

"The quantities will be fixed and reported on the basis of Indigo powder or Indigo in grains full strength. The agents of both parties in Japan will take the greatest care that the agreed quotas will be closely observed and that any

Digitized by Google

quantities exceeding the quota or shortage will be regulated soonest possible by holding back or pushing sales by the respective party, the necessary measures to be decided unanimously by the agents.

* * * * * * *

"The agents of both parties decide jointly in accordance with their factories on the sale and price policy for Indigo in Japan and are jointly responsible for the loyal execution of the foregoing agreement, especially with regard to strictly observing the quotas agreed upon.

"It is approved by both parties that the Indigo sales price for the brands of their factories will be immediately increased by Yen 10.—per cask of 1 cwt. net basis Indigo powder resp. grains.

"The above agreement starts on January 1st, 1931, and will last three years terminating December 31st, 1933."

On the first page of this letter of March 18, Guy W. Talbert, general manager of National, appended the following note:

"Mr. LUDWIG: I would have preferred not to have had a written agreement on file, and if you feel as I do on this matter, the attached copy together with all others should be destroyed.

"G. W. T. 4.9.31."

The memorandum agreement just referred to was apparently ratified by representatives of all companies concerned at meetings held March 24 and 25, 1931, the minutes of which meetings (exhibit 56) reaffirm the principles previously agreed upon by Waibel and Lumley.

Entry of Mitsui into the Japanese market was mentioned in a letter from Lumley to Ellis dated March 26, 1931 (exhibit 57).

The Japanese indigo agreement was renewed in 1933 for 3 more years. A cable dated July 31, 1933 (exhibit 58), to F. B. Hillhouse, at Kobe, Japan, stated: "Indigo agreement renewed for further three years on old basis."

Definite inclusion of the Mitsui interests did not take place until 1934. In the meanwhile Mitsui had achieved sufficient position in the Japanese market so that when the importers proposed that they receive a one-third quota, Mitsui countered with an offer of 20 percent participation. The main consideration on the part of the cartel and National was the ultimate objective of Mitsui. This is indicated in the following excerpt from a letter of Lumley to Ellis, dated January 26, 1934 (exhibit 59):

"The conversations with Mitsui which began in the way described developed until they finally veered around to the present discussion regarding quota. At this point, recall that the present understanding runs for six months only. It is the Cartel idea that this six months is in the nature of an armistice during which a status quo will be preserved by mutual consent in Japan; it is also the Cartel idea that either during this six months' period or at any rate along toward the end of the period it may be possible to get Mitsui to discuss the question in which the Cartel is really interested, namely, Mitsui's ultimate indigo objective. As the six months' period draws to a close the question will naturally arise "what next?" In this situation Mitsui will also naturally be willing to discuss the status at least in Japan and the Cartel hope that at that time the question of world status and arrangements may be successfully introduced. At any rate it has been made plain to Mitsui that importers will not continue the present arrangements unaltered after the expiration of the present period. More particularly importers will not agree to continue to abstain from importing further supplies into Japan. The Cartel considers that discussions regarding this question of future imports by importers into Japan will afford a favorable opportunity perhaps of suggesting to Mitsui that it may be possible to arrange nonimportation into Japan under certain conditions. The next step is to discuss what these conditions are. Mitsui may be willing to enter into this discussion. If not, at any rate, nothing is lost.

"From full discussions with the Cartel representative here I gathered that this is the main consideration which induces the European Cartel to favor the present Japan quota arrangements with Mitsui, namely, that it furnishes an avenue of approach to discussions with Mitsui which may lead to Mitsui's stating definitely what is their ultimate world indigo objective. And I gather that the Cartel is most anxious to get Mitsui to enter into a discussion on this subject with the idea that possibly Mitsui may finally be bound to some ultimate maximum indigo production; naturally, the hope of the Cartel is that it will be possible to make such a maximum acceptable to the Cartel."

Digitized by Google

In February 1934 Lumley wrote to Ellis enclosing a copy of a letter from one G. Kuhweide, representing the indigo importers to Japan, to Mitsui, dated January 27, 1934 (exhibit 60). This enclosed letter which is in the nature of an agreement by these parties, states in part as follows:

"I recapitulate the terms of the agreement herewith: The indigo sales are to be carried on, insofar as the goods are to be consumed in the present territory of the Empire of Japan, including Taiwan and Chosen, in such a manner that of the total sales: 75% are to be supplied by Mitsui, and 25% are to be supplied by the four foreign factories.

* * * * * * *

"The share of 25% will be divided amongst the 4 foreign factories by their Japanese representatives.

* * * * * * *

"Prices: On the 1st of February the following price increase will be made: Mitsui, Yen 10.—per 112 lb. 100%; Imported Indigo, Yen 5.—per 112 lb. 100%.

"*Terms of the agreement.*—6 months from the 1st of February 1934.

"It is mutually understood that the present agreement is without prejudice to any final settlement of the whole Indigo problem which may be come to at a later date."

This agreement was subsequently extended through May 1935 (exhibit 61).

A letter from W. W. Hoag, assistant foreign sales manager of National, to Talbert, general manager, dated May 16, 1935 (exhibit 62), indicates that by a new agreement Mitsui was alloted 85 percent of the Japanese indigo market.

On September 30, 1937, a cable (exhibit 63) was sent to Mr. Lumley at Kobe stating: "Existing indigo arrangement has been renewed without change for three years ending December 31, 1940."

On November 19, 1938, B. A. Ludwig, president of National, in a confidential letter to Talbert (exhibit 64), stated as follows:

"Mr. TALBERT

JAPAN—MITSUI

"Director Hoppen of the I. G. will reach Japan on Dec. 6th to discuss with Mitsui a renewal of the Indigo agreement. This agreement will be extended to the end of 1940 on practically the same basis as previously, with the exception of:

"Mitsui's desired participation in markets other than China and Japan. The negotiator will endeavor to restrict Mitsui to Dutch East India and British India, allowing the necessary small quantity, that is, not exceeding 20 tons for Dutch East India, 100%; 30 tons for British India—basis. Only, however, if they are hard pressed are these concessions to be made.

"Another question which will come up and to which the negotiator will strenuously object, is the claim made by Mitsui to be credited with the undelivered portions of their Indigo quota during the war in China.

"Inasmuch as the du Pont Co. is not interested in either British India or Dutch East India, they will not participate in the sacrifice that we may have to make.

"The old agreement with Japan having 85% and the other parties 15% still stands, but if the 15% is not taken up by the other parties, Japan will want the difference.

"Another point that Mitsui may possibly raise, and which will be firmly objected to, is a request for a guaranteed minimum quantity disregarding the actual consumption of Indigo in these markets. They can only continue on basis of a quota which is calculated on the actual consumption of Indigo in these markets during the year.

"Inasmuch as these propositions and discussions are of great importance, I have authorized the acceptance for Nacco, and Director Hoppen will negotiate on the basis stated above.

"Please arrange to advise Mr. Fistrere and Mr. Lumley accordingly.

"———— ————, *President.*

A letter from Ellis to Talbert, dated November 21, 1938 (exhibit 65), states that National has 20 percent of the 15 percent allocated to the importers, i. e. 3 percent of the entire Japanese market.

In 1939 Japan demanded increased participation in the dyestuff markets in the Dutch East Indies, China, India, and Manchoukuo. Mitsui also in effect excluded the importers from Japan. A letter from Lumley to Ellis, February 16, 1939 (exhibit 66), states in part:

Digitized by Google

"*Japan.*—Mitsui state that as the Government will not license Indigo imports, they are not willing to make any agreement covering Japan.

"*Dutch East Indies.*—Mitsui demand a quota for 1939, 15 tons and for 1940, 20 tons of Indigo 100% basis.

"*British India.*—Mitsui demand a quota of 20 tons for 1939, and 30 tons for 1940, of Indigo 100% basis.

"*China and Manchoukuo.*—Mitsui demands a quota of 40,000 piculs for 1939, and 50,000 piculs for 1940, 20% basis.

* * * * * * *

"For all other countries except those specified above, Mitsui demand a quota of 15 tons per year 100% basis; Mitsui to be free to export to any country they choose."

3. *India*—1931 was also the year in which cooperative activity apparently commenced with respect to the Indian market. This followed the patterns described for the Chinese and Japanese markets; i. e., market allocation and price fixing.

On September 28, 1931, F. S. Kerr, National's agent in Bombay, cabled his home office for instructions regarding a proposed price increase (exhibit 67):

> "Contacted with competition Saturday and today. Stop. I. G. proposed increase in price immediately as naphthols by 30%, sulphur blacks by 52%, indigo-alizarine, and all other colors by 25%.
>
> "Ciba, Sandos (sic), British Alizarine—all agree to above. Stop.
>
> "I. C. I. have instructions that if I. G. and we initiate increase in price they are to follow to extent of 25% on Alizarine and 10% on all other colors. Stop.
>
> "I. C. I. telegraphing for instructions regarding DuPont. Stop.
>
> "All competitors except I. C. I. agree to immediately increase 25% on Alizarine and 15% on all other colors wherever possible with the object of increasing by 25% eventually. Stop.
>
> "I. G. telegraphing home office today to endeavor to persuade I. C. I. to follow up to 25% increase on all colors. Stop.
>
> "I. G. have increased price Sulphur Blacks by 52% except outstanding contracts and believe I. C. I. will follow if we do. Stop.
>
> "I. C. I. have instructions not to increase price of nonmoving colors since they believe this is good opportunity for clearing. Stop."
>
> We have not committed ourselves. Telegraph instructions.

On this message, Talbert wrote the following note:

"Mr. Ludwig: This is good news. The next step it would seem to me before agreement would be some statement as to market participation, du Pont & I. C. I. now being partners, and if du Pont can follow their usual plans of agreement on price this looks even better. If status quo can be maintained for a given period and then a new market division arranged on a sound basis, I recommend your approval.

"G. W. T. 9.29.31."

Approval of the proposed agreement was cabled to W. Wickersham in Bombay, November 20, 1931 (exhibit 68), "with the understanding that agreement * * * can be cancelled by us at any time * * *"

In 1933 American Cyanamid, through its Calco Chemical Division, attempted to obtain a foothold in the Indian market. Mr. Kerr was now Calco's agent, and his efforts met with resistance from Havero (I. G.'s agency in India) and National. Havero's policy was to keep Calco out of the market entirely. This is indicated in a letter from A. C. Lumley, National's Far Eastern representative, to Ellis, in New York, April 4, 1933 (exhibit 69), in which Lumley proposes limited cooperation with Calco:

"Mr. Seyd (I. G. Representative) stated that Havero's policy is to put every possible obstacle in the way of a new vendor like Mr. Kerr entering the market; that when Mr. Kerr has demonstrated that he cannot be kept out of the market, then will be time to consider cooperation with him.

"Havero state that telling Mr. Kerr their prices would be equivalent to broadcasting them. They do not trust Mr. Kerr to make proper use of such information, and therefore they do not intend to give it to him.

"Mr. Kerr has not yet come to us for any information regarding market prices. If he does come later on under circumstances which convince us he is really

Digitized by Google

trying to avoid price cutting, we think it might be advisable to help him to avoid underselling the market.

"Furthermore, if we find that Mr. Kerr is selling below the market, we believe it will be in order to call the facts to his attention.

"We cannot entirely condemn the Havero point of view; but it will be to the advantage of all concerned if we help Mr. Kerr to avoid unnecessarily undercutting established market prices."

Ellis also advocated cooperation in a short note to Talbert, May 1 1933 (exhibit 70) reading in part:

"If we adopted Havero's policy then F. S. Kerr might do a lot of damage by obtaining low-priced business which would simply contribute to the very unfortunate situation that now exists with the repackers.

"It is therefore recommended that Mr. Lumley initiate discussion with F. S. Kerr when he can find actual cases of Mr. Kerr under quoting the market. Mr. Lumley also to be told that we are desirous of knowing Mr. Kerr's reaction to such advice."

Ludwig, president of National, favored following Havero's proposal to keep Calco out. To Talbert, he wrote as follows on May 2, 1933 (exhibit 71):

"I am not in favor of approaching Mr. Kerr at this time. According to Mr. Lumley's statement, he has not sold anything so far, and inasmuch as we are now cooperating with Havero, it is necessary that we follow the same policy suggested by them, namely not to permit Mr. Kerr to gain a foothold in India. If we assist him by any kind of cooperation, we shall have to figure on this participation at a later date. This is exactly the same situation as we are now facing with Dow in China. From Mr. Lumley's letter it is evident that Havero is absolutely opposed to dealing with Mr. Kerr."

And, accordingly, Ellis wrote Talbert on May 8: "Advice is being sent to Mr. Lumley to follow the Havero plan" (exhibit 72).

The effect of new competition was indicated the following year, 1934, when Russian dyes began to reach India. On July 26, Lumley, Far East division manager, advised Ellis (exhibit 73) of this Russian competition and stated that it required price adjustment to meet it. He added:

"Bombay request authorization to sell at the new prices noted. The cartel representatives are simultaneously requesting similar authorization. In order to hold our established position in these colors, and also to combat the introduction into India of the Russian types, it is recommended that the requested prices be authorized, if the cartel representatives sell at corresponding prices."

It is desirable that the new prices, if authorized, be issued before the end of July.

A new quota allocation for the Indian market was established in 1937. On June 30 Ellis cabled Wickersham (exhibit 74):

"*Indigo 60% Grains.*—Effective April 1, sales quota, Cartel 90%, National 10%. Stop.

"July 1 and tenth day each month thereafter exchange figures stock arrivals sales."

This cable was confirmed by letter of the same date from Ellis to Wickersham (exhibit 75). In further clarification, it is stated:

"Each party shall continue as heretofore the relative sales in different districts in the same proportion as in the past, but a certain latitude is, of course, allowable.

"Selling prices to be arranged between both parties in Bombay, so that the above-mentioned selling quotas can be maintained.

"The plan is to continue for three years, from April 1, 1937, to March 31, 1940, and thereafter from year to year unless either party is dissatisfied, in which event a three months' cancelation notice will be served before March 31, of a respective year."

The import of the Japanese in the Indian market is revealed in the following exchange of communications. On August 2, 1939, H. E. Lorenz, National Agent in Bombay, cabled (exhibit 76):

"Japanese request 4 annas gap [meaning a price differential] selling price Japanese-European Cartel Indigo—local European Cartel agreeable—may we agree? Telegraph."

Talbert recommended to President Ludwig (exhibit 77) that National should not consent to this means of furthering Japanese interests; but Ludwig, mindful of cartel commitments, replied:

"I quite share your sentiments, but having agreed on a differential in China and Europe, I do not see how we can avoid granting this request."

Digitized by Google

Accordingly, the following cable to Lorenz in Bombay was approved (exhibit 78):

"Refer to your cable of August 2, 4 anna differential—we agree."

A note from Ellis, foreign sales manager, to Talbert, August 2, 1939 (exhibit 79), clarifies the significance of this so-called gap or differential. He writes:

"This entire plan is the outcome of the original negotiations in Japan when, as I recall, approval was not only given for Mitsui to sell Indigo in Belgium, Dutch East Indies, Singapore, India, and Mexico, but also at 'an introductory allowance.'

"The introductory allowance is, of course, the same as the 'gap' mentioned by Mr. Lorenz, or my phraseology of 'differential.'

"Furthermore, we agreed to a differential in Belgium on July 21, 1939. * * *"

The foregoing clearly establishes the presence of quota and price-fixing arrangements for the Indian market. The 1937 agreement between National and the cartel was intended to operate through 1940, so that the existence of these cooperative endeavors over the 10-year period since 1931 is clear. It is significant that du Pont was not a party to these agreements—you will recall that I have explained previously that du Pont transferred its Indian business to I. C. I. in 1931, and the latter company apparently was a party in the negotiations just reviewed.

4. *South America.*—Similar organization of the market by the cartel and certain American producers took place in South America, particularly in Argentina and Brazil, two large consuming nations, which, because they were also nonproducers, lent themselves well to the type of arrangement in evidence in far eastern markets.

Pursuant to the policy of collaboration in markets not exclusively reserved to either party, enunciated in their 1929 agreement, du Pont and I. C. I. established during the 1930's jointly owned companies in Argentina and Brazil for the advancement of their mutual interests in those countries. A memorandum on The Duperial Companies, as these amalgamated interests were called, prepared by W. H. Coates of du Pont in 1938, explains the reasons for the formation of the companies (exhibit 80):

"(*a*) Both du Pont and I. C. I. were looking to a considerable expansion of their respective volumes of sales in these countries;

"(*b*) Concerned to a large extent with the same products, some clash of interest appeared likely, which in view of the general relations between the two companies it was desirable to avoid;

"(*c*) It was felt that an amalgamation of interests would strengthen the power of both companies to continue their policy of expansion in South America; and

"(*d*) It was recognized that the growth of economic nationalism would tend to involve the continued expansion of manufacture on the spot."

In the Argentine and Brazilian markets, arrangements between the cartel, Duperials, and National did not include quota allocations; this for the reason that the Duperials had not been engaged in business for a sufficiently long time to determine accurately the extent of their participation. But there was no lack of cooperative endeavor.

Argentina.—On November 7, 1935, National sent a cable to F. H. Coe, its representative in Buenos Aires:

"Meet Mr. Brugemann with friendly cooperation; stabilize colors which outside competition have disrupted."

Mr. Brugemann was the I. G.'s Argentine agent.

A letter of the same date confirmed this cable and in further explanation added (exhibit 82):

"* * * The main colors in which interest has been shown are those which du Pont have actively endeavored to attain a position in, to the detriment of both our and I. G. sales.

"We understand that Mr. Brugemann will take the initiative in suggesting prices in local currency in accordance with the list attached. It is our understanding that the representatives of du Pont in Buenos Aires will maintain such established prices.

"We therefore request that in discussions with Mr. Brugemann you cooperate in order that a higher level of prices be established which will not be upset by price cutting tactics on the part of outside competitors."

Digitized by Google

On December 3, a cable was received from Coe (exhibit 83) indicating that the suggested stabilization had been reached:

"According advice received from Brugemann yesterday all suppliers including du Pont agree minimum price four pesos ninety-five for all 200% Direct Blacks. Stop

"He stated their previous price Alpargatas to be now invalid from which I assume he will quote agreed price. Stop."

There is attached to this document a list of corresponding I. G. and National colors, together with the prices to be charged for each.

A letter from Coe to W. Hoag, National's assistant manager of foreign sales, February 26, 1936 (exhibit 84), contains a summary of discussions attended by representatives of du Pont, Geigy, I. G., and National. Agreements respecting action on certain specific colors was reached. Furthermore—

"Dr. Oberhoff (of I. G.) suggested the thought that we should be careful not to place our agreed prices too high in order that additional suppliers might not be attracted to the market. He mentioned specifically Holliday and the Japanese. Mr. Swezey (of du Pont) informed me personally that it was his understanding that the Japanese plan to appear in this market with dyestuffs in April or May of this year. With this information, the wisdom of maintaining reasonably low prices becomes obvious.

"After some opposition from Mr. Brugemann (of I. G), it was agreed that representative samples of the colours involved in the agreement should be exchanged between the I. G., du Pont, and ourselves. Tests of these samples are to be made independent and the results discussed at a later date.

* * * * * * *

"It was agreed that the duration of the agreement should be for one year, and that during this year the local representatives of the companies concerned should arrange to meet at intervals of about two months for an informal discussion of whatever problems might arise. These informal discussions are not intended to replace the use of immediate discussions in case of any violations of the agreement.

* * * * * * *

"Adjusted prices for Uruguay are to be discussed this week."

A letter from Coe to Hoag, dated March 10, 1936 (exhibit 85), states that an agreement embodying the terms agreed upon had been concluded, and a copy thereof was attached to the letter.

On April 9, 1937, C. A. Langensiepen, I. G. agent in Argentina, informed E. R. Ellis, foreign sales manager of National, that (exhibit 86)—

"* * * it was unanimously decided at yesterday's meeting in Buenos Aires to continue the agreement of March 10th, 1936."

On July 5, 1938, C. W. Kates, acting branch manager, wrote to Ellis regarding another conference between representatives of I. G., Duperial, and National (exhibit 87):

"Discussion was centered around two main recommendations: (1) To inaugurate a new system for calculating prices; (2) to include new products either in the present agreement or in an additional agreement. Also discussed were Sulphur and Direct Blacks as of our letter dated May 17th, 1938.

"The discussion concerning new products was long and the arguments many. Messrs. Lank and Buescher were very anxious to include Acid and Chrome Blacks, but the I. G. were reluctant to even considering the suggestion, claiming (1) the French and Swiss would probably not sell anything but their regular types, which are imported 'as is' and have been sold in that manner since they entered this market, (2) because there were so many classes of concentrations it would be extremely difficult, if not impossible, to calculate a Standard. Mr. Kinsman (an official of the du Pont Company) stated the problem had been solved in the States, therefore he could see no reason why it could not be solved here."

This last statement by Kinsman concerning calculation of standards in the United States is especially significant and will be subsequently referred to when the domestic market is further examined.

A final letter respecting the Argentine picture from Ellis to A. R. Edwards, then manager of National's Argentine branch, dated September 26, 1940 (exhibit 88). Ellis stated that a National representative had met in New York

Digitized by Google

Mr. Salmon, managing director of Duperial, of Argentina, and another individual "whose name it is not necessary to mention at this time," and further—

"* * * He (Salmon) is naturally interested in better prices; so are we; and he was told the best way to obtain better prices is for him to take the initiative and that you would certainly be happy to follow. It was also suggested that if he and Mr. Lank saw you more frequently and did not rely upon information furnished to them by Mr. Buescher (or I. G.), or any other of their salesmen, no doubt an improvement could be effected.

"Mr. Salmon was told frankly that we were not interested in any written arrangement; furthermore, that the plans toward improvement must be done "on the ground," i. e., in Buenos Aires, where it is felt the direct representatives have a more intimate knowledge from which a more consistent understanding could be reached. However, it was reiterated that nothing in writing was wanted, and, specifically relating to your letter, the plan outlined is a close copy of the China arrangement.

"The writer is not in a position to authorize you to apply the China plan to the Argentine, Uruguay, or any other South American country.

"You and your contemporaries should be in a position to establish market prices based upon definite strength determination of color, which prices should be followed by you if such an understanding is reached. But if you have any indication that a contemporary is not adhering to such prices, then immediately revert to the prices prevailing before any arrangements were established."

Brazil.—The same type of market situation has pertained in Brazil. On December 24, 1932, Ellis wrote Talbert, general manager of National, enclosing a copy of a letter from Langensiepen (of I. G.) to John Jurgens & Co., representatives of National in Rio de Janeiro, November 10, 1932, which indicates an agreement to raise the prices of certain dyestuffs 20 percent.

"The 20% price increase desired by the principals will cover all dyestuffs of the Direct Black, Direct Blue, Direct Brown, Direct Red, Acid Orange, Nigrosine groups which have been introduced or manufactured in Brazil by the representatives of the I. G., Ciba, Geigy, Sandoz, Kuhlmann, Nacco, and Acna (of Italy) Messrs. John Jurgens & Cia and Falzoni also include themselves in this agreement for their Cubachrome and Enia dyestuffs.

* * * * * * *

"If the representatives should meet with resistance on the part of a customer, they will hold a confidential meeting among themselves to handle this particular case in an equitable manner. In such case, the firm of John Jurgens and Co. will employ the Allica Commercial de Anilinas Ltda as mediator.

"This agreement is to be held strictly confidential in its entirety, and the representatives bind themselves to strictest secrecy."

A subsequent letter, November 25, between the same parties states:

"After the foregoing agreement between the individual principals and a unanimous agreement between the following representatives, John Jurgens & Co., Allianca (I. G. agency), Klinger & Ci. Gulherme Humizach A. Schumtziger (Swiss agency), Dr. E. Vella (French), and A. Falzoni (Italian) was arrived at, in connection with my arrangement with the above representatives, the 20% increase in the f. o. b. prices of the groups Direct Black, Direct Blue, Direct Brown, Direct Red, Acid Orange, and Nigrosine will be effective as of December 1st of this year for the whole of Brazil."

These letters form exhibit 89.

A letter from Ellis to Ernst Gobel, of the Jurgens Co., dated May 9, 1934, states that (exhibit 90):

"Mr. C. A. Langensiepen, of I. G., is leaving here Saturday, May 12, on the S. S. 'Southern Cross,' charged with the mission of effecting an increase of 20% in selling prices in Brazil.

"We understand that he will negotiate with you along these lines, contingent upon a distinct understanding that there will be no forward contracts negotiated, written, or accepted in any form. Also, that the date on which the new prices will become effective will be subject to agreement between you and Mr. Langensiepen.

"Furthermore, it should be distinctly understood by you and by him that the new prices can be reduced if, in your judgment and the judgment of Mr. Langensiepen's representatives in Brazil, such reduction in prices is appropriate to meet so-called 'outside' competition."

Digitized by Google

In 1936 du Pont and I. C. I. organized the Duperial Co. of Brazil, which, however, did not actively commence business until the following year (exhibit 91).

Concerning the effect of the entry of Duperial into the Brazilian market "Companhia" (probably John Jurgens) wrote National, June 26, 1937 (exhibit 92):

"Gentlemen, we beg to inform you that in the meantime the new combine between the Imperial Chemical Industries and du Pont has been established under the name of

"*Industrias Chimicas Brasileiras 'Duperial' S. A.*—You may see all details from the attached cut of the Official Paper. As we already told you in a previous letter, there happened some nice competition fights between the I. G. and 'Duperial,' principally in Sao Paulo. Certainly we shall have some troubles, too; but, in order to be prepared, it is absolutely necessary to be provided with sufficient stocks."

A memorandum from Ludwig to Talbert, November 28, 1938 (exhibit 93), makes this reference to the Argentine and Brazilian market situation:

"The quota basis seems to appeal to the I. G. very strongly. Since they have the majority of the business, a *status quo* would of course be acceptable to them, but hardly acceptable to other concerns interested in doing business with these countries."

On the following day, November 29, Ellis referred to this memorandum in a note to Talbert (exhibit 94):

"Du Pont are alleged to have made the statement that any quota to them less than 20% would be unsatisfactory, in contrast to their present participation of both markets, said to be between 8% to 9%.

* * * * * * *

"If a quota is contemplated, it should be based on the exclusion of those colors which National does not now offer in both markets, so that the way would be open in the future for National to strive for a portion of the market exclusive of any quota restriction if, as, and when National found it possible to offer any or all of this type of colors."

The full extent of cooperation with the cartel in South America is singularly evidenced by an excerpt from the "Semiannual report of foreign relations department" of du Pont, dated February 9, 1940 (exhibit 95). In a paragraph relating to I. G. Farbenindustrie, it is stated:

"I. G. have given evidence of the adoption of a policy of industrial development in South America through purchase of the Fluminense caustic-chlorine plant in Brazil and of shares of the Electroclor Company in Argentina. Arrangements have been made for the repayment to the I. G. of money advanced to Duperial for the purchase of shares in the latter company as it is impracticable for I. C. I. to be in partnership relationship with a German Company. *The du Pont Company informed I. G. that they intended to use their good offices after the war to have the I. G. participation restored.*" [Italics supplied.]

The inference which may be drawn from this last sentence requires no additional comment.

5. *England.*—I should like to call your attention to one further export situation. You will recall that through the over-all agreement executed by du Pont and I. C. I. in 1929, England was reserved as exclusive territory for I. C. I. Furthermore, when I. C. I. joined the European cartel in 1931, I. G. Farben agreed to withdraw from the United Kingdom except for sales through I. C. I. (refer to exhibit 27 supra). Furthermore, General Aniline and the Swiss were restricted from sales outside the United States which precluded them from trading in England. The following documents support the conclusion that National stayed out of the United Kingdom also.

On June 16, 1932, Ellis, foreign sales manager of National, wrote Talbert, general manager (exhibit 96), concerning extension of sales activity in the British Isles. This letter states in part:

"Nearly five years ago an investigation was made to determine the feasibility of our establishing either a branch or agency in England, Ireland, Scotland, and Wales. In the midst of our investigation advice was given to me orally by Mr. Vermilye [a director of Allied Chemical and Dye Corporation, owner of National] to cease all efforts in this direction unless I. C. I. entered the United States market."

Digitized by Google

The reason for this early abstention from the English market may have been the ownership of a substantial block of Allied stock by I. C. I. And in 1935, the possibility was again broached in a letter from H. C. Pennrich, National's European manager, to Ellis (exhibit 97). At this time the British requirement of obtaining an import license before importing was about to expire. On this letter, Talbert added the following note, dated September 25, 1935, which intimates that National's policy was not based on British legislation:

"Mr. ELLIS: The answer is *No* and in about that character—Contact develops the fact that previous instruction has not altered nor is it likely to—i. e.—stay out of England—etc., etc. Please see that Mr. P. [Pennrich] does not contact nor promote his ideas on this matter.

"G. W. T. 9-25-35."

In 1936, a distinction was drawn between the sale of dyestuffs and of intermediates, and Ludwig, president of National, authorized the sale of beta-oxynaphthoic acid in England, despite Talbert's advice, May 26, 1936.

"My ruling in view of my instructions from Mr. O. F. W. [O. F. Weber, officer of Allied Chemical & Dye Corporation] would be to sell nothing in England until that ruling had been changed."

Ludwig's instructions were:

"Mr. TALBERT:

"ENGLAND

"Mr. Ellis's note of the 25th.

"My recollection of the talk with Mr. OFW is that there was no intention on the part of AC&D to sell dyes especially, direct from New York to England. There is no ruling on intermediates from our European office to England or elsewhere, and although the first order passed through without my approval, I see no objection now to continue the sales of this intermediate if it can be sold at a good price.

"[Signed] B. A. LUDWIG."

These notes, including that of Ellis, referred to by Ludwig, constitute exhibit 98.

Apparently, Ludwig made a further experiment and decided to approve shipment to England from National's European office, though not from the United States. However, it is clear that no dyes were exported to England from any point.

V. METHODS OF FOREIGN CONTROL IN UNITED STATES

1. *General Aniline & Film Corporation.*—In an earlier section of this statement I related how German and Swiss interests re-entered the United States market after the end of the last war, and how the I. G. successfully overcame the barriers erected to keep it, and its predecessor companies before their amalgamation into the I. G., off the American dyestuff stage. Neither seizure of German patents during the war, establishment of the Chemical Foundation, nor imposition of high tariff walls achieved their intended objectives. I have recited the various agreements executed by the I. G. and its predecessor companies with Grasselli Chemical and Grasselli Dyestuff in this country, and the establishment in 1925, of General Dyestuff Corporation as the exclusive selling agent for the products manufactured by Gasselli Dyestuff (renamed General Aniline Works, Inc., in 1929) and those imported from the I. G. I also mentioned the organization by Hermann Schmitz, in behalf of I. G. Farben, of American I. G. Chemical Corporation in 1929, to which the stock of General Aniline Works was transferred, and in 1939 of General Aniline & Film Corporation into which American I. G. and General Aniline Works were merged. At this point, I wish to detail more specifically the organization and structure of these companies, and their importance to I. G. Farben during the succeeding period.

The organization and control of American I. G. and its successor, General Aniline & Film, is an interesting sidelight on the central picture I have been developing. This has been the unit through which control of I. G.'s enterprises in this country has been maintained, and clearly illustrates the means and methods used to achieve an effective liaison between the two groups.

The stock authorization of American I. G. was 3,000,000 common, A shares and 3,000,000 common, B shares. In return for its stock interests in General

Digitized by Google

Aniline Works, an Agfa-Ansco Corporation,[1] plus $10,000,000 cash, I. G. Farben received all the B shares and 400,000 A shares, which latter class participated in dividends at a ratio of 10 to 1 over the B shares. Thirty million dollars of convertible bonds were sold to the American public; there were guaranteed as to principal and interest by I. G. Farben, which received, in return, an option to purchase an additional 1,000,000 A shares.

In 1928, Hermann Schmitz, financial director of I. G. Farben, had organized in Switzerland, a company known as I. G. Chemie (Internationale Gesellschaft fuer Chemische Unternehmungen, A. G.), the purpose of which was to serve as holding company for I. G.'s widely extended interests outside Germany. Hermann Schmitz served as president of I. G. Chemie until sometime in 1940, and the management of the company has always been composed of individuals closely connected with I. G. Farben. The latter guaranteed certain dividends on I. G. Chemie stock, and received in return an option on the assets and property of I. G. Chemie at book value, which guarantee and option continued until 1940.

I. G. Chemie had always held control of the A shares of General Aniline & Film Corporation, until the recent seizure of the foreign-held stock of General Aniline by the Secretary of the Treasury, at which time I. G. Chemie owned 388,816 out of 529,270 A shares outstanding. Also outstanding were 2,050,000 B shares. In the treasury of the corporation were 430 plus shares of A stock and 950,000 shares of B stock.

The record holders of the stock as of October 1, 1941, and the number of shares standing in their names, are listed in an affidavit prepared by the corporation in December 1941 submitted to a court of chancery in Delaware to show cause "why a master should not be appointed at this time to hold a special meeting of stockholders of General Aniline & Film Corporation to elect a board of directors" (exhibit 99). All of the 2,050,000 B shares and at least 487,065 A shares were held by or for nationals of the Netherlands, Switzerland, or Germany; i. e., 98+ percent of all outstanding shares.

Furthermore, General Aniline held a substantial block of the stock of I. G. Chemie. In 1940 it owned 84,900 shares of common stock out of 250,000 shares outstanding.

The management of General Aniline has always been dominated by I. G. or former I. G. officials. Hermann Schmitz served as president from 1929 to 1936, when he was succeeded by his brother, Dietrich A. Schmitz, a naturalized American citizen, who occupied the presidential office until the fall of 1941. Hermann Schmitz was chairman of the board of directors from 1936 to 1939. The original board of directors of General Aniline contained 14 persons, of which 9 were or had been members of the board of I. G. Farben (Hermann Schmitz, Carl Bosch, Max Ilgner, Fritz ter Meer, and Wilfred Greif), or had been previously employed by I. G. Farben in Germany or as representative in this country (Walter Duisberg, Adolph Kuttroff, W. H. vom Rath, Herman Metz). A tenth, W. E. Weiss, through Sterling Products, had been under contract to I. G. for some time. The remaining four members were representative American citizens: C. E. Mitchell, chairman of the board of National City Bank; Edsel B. Ford, now president of the Ford Motor Co.; W. C. Teagle, now chairman of the board of Standard Oil of New Jersey; and Paul Warburg, chairman of the board of Bank of Manhattan Co.

During the period 1929–39 changes took place in the constitution of the board and the number of directors varied, but a majority of the directorate were at all times individuals with I. G. backgrounds or connections. In 1939 an effort was made to give the board a more American complexion, but, despite the resignation of Hermann Schmitz, Carl Bosch, and Walter Duisberg, and the appointment of 7 new directors, 7 of the then 12 members belonged to the I. G. group. This predominance increased during 1940 and 1941 when certain directors, including Edsel Ford, resigned.

The following chart is a list of the directors of General Aniline from the time of its organization in 1929 until 1941; the period of time served and the nature of connection with the I. G., where such existed, are indicated.

[1] Organized in 1928, through merger of German Agfa's interests in United States and Ansco Corporation, an American manufacturer of photographic materials. In 1929, as indicated, American I. G. acquired I. G. Farben's interest in Agfa-Ansco. Thus, achievement by I. G. of control of an important part of the American film industry was similar to development of control in dyestuffs.

Digitized by Google

Directors of General Aniline & Film Corporation, 1929–1941

	Period of time served as director	Period of time served as officer	Nature of I. G. Farben connection
Hermann Schmitz (G).	1929–1939; Ch. Bd. 1936–1939	Pres., 1929–1936	Officer, Director, 1925; Present Ch. of Exec. Comm.
Carl Bosch (G)	1929–1939		Ch. of Exec. Comm.; Ch. of Bd. in 1940; died 1940.
Max Ilgner (G)	1929–1934	V. P., 1929–1934	Officer and Director, 1925 present.
Wilfred Greif	1929–1939	V. P., 1929–1935	A Managing Director, 1925–1929.
Fritz ter Meer (G)	1929–1934		Member Exec. Committee, 1925–date.
Walter Duisberg (N).	1929–1939	1st V. P. and Treas., 1935–1939.	Former employee; father formerly Ch. of Bd.
Adolph Kuttroff (N).	1929–1930		Former importer from predecessor company.
W. H. von Rath (N).	1929–1941	1929–1941	Former employee; father was V. Chairman of Board, 1925–1940.
H. A. Metz	1929–1934	1929–1934	I. G. Agent prior 1925.
C. E. Mitchell	1929–1933		
Edsel B. Ford	1929–1941		
W. C. Teagle	1929–1939		
Paul Warburg	1929–1932		
W. E. Weiss	1929–1941		Ch. of Bd.; Gen'l Mgr., Div. of Sterling Products, under Contract to I. G.
D. A. Schmitz (N)	1934–1941	Pres., 1936–1941	Brother, H. Schmitz.
E. M. Clark	1936–1941	V. P., 1938–	
H. Aickelin (N)	1939–1941	V. P., 1939–1941	Former employee.
Rudolph Hutz (N)	1939–1941	V. P., 1939–1941	Former employee.
W. P. Pickhardt	1939–1941	V. P., 1939–1941	Former importer from I. G.
Ernst Schwarz (N)	1939–1941	V. P., 1939–1941	Former employee.
W. H. Bennett	1939–1941		
W. C. Breed	1939–1941		
H. S. Williamson	1939–1941	V. P.; Sec'y 1939–1941.	
Felix Iselin (S)	1940–1941		President of I. G. Chemie, 1940–date

G: German citizen.
N: Naturalized citizen of United States.
S: Swiss citizen.

Exhibit 100 is an analysis of dividend payments made by General Aniline from November 1934 to December 1940.

In January 1941, I. G. Chemie, anticipating seizure by the Alien Property Custodian in the event of war between the United States and Germany, proposed to create in this country a voting trust of 1,550,000 B shares owned beneficially by two Netherland corporations. Its application to do this was formally rejected by the Government through the Department of Justice in May. Then, I. G. Chemie proposed to sell controlling shares to General Dyestuff Corporation and rejected a suggestion emanating from General Aniline & Film that these shares be sold to some representative American purchaser whom General Aniline was proposing. The board of directors of General Aniline opposed this transfer to General Dyestuff; D. A. Schmitz, the president, however, advocated the deal, and he was ousted from office by the other directors in September 1941. (On October 2, the Treasury Department denied the application of General Dyestuff Corporation for permission to purchase the 1,550,000 shares from I. G. Chemie.)

A schism developed between certain groups on the board, on the issue of foreign control, and certain other directors were ousted from offices they held. Former Judge John Mack was elected president, and other distinguished American citizens, including former Ambassador William Bullitt, were invited to become members of the board. An effort was made to buy the foreign-held stock of the corporation which constituted approximately 97 percent of the outstanding shares. Finally, in December, representatives of the Treasury Department took over the corporation. More recently, Secretary Morgenthau seized these foreign holdings for which he was to act as trustee; the entire board of directors was removed; and a new board of four members appointed to operate the company. Subsequently, these properties were transferred to the Alien Property Custodian. Meanwhile, investigation continues.

2. *Control of General Dyestuff Corporation.*—At the time of the organization of General Dyestuff Corporation in 1925, its stock was allocated, as indicated previously, to the holders of stock in the companies whose selling interests were merged into General Dyestuff, i. e., Grasselli Chemical which transferred the sales branch of Grasselli Dyestuff, H. A. Metz, exporter of Hoechst products, and

Digitized by Google

Kuttroff-Pickhardt & Co., representatives of Badische. When Grasselli Chemical sold its interests in Grasselli Dyestuff and General Dyestuff to Metz in 1928, at the time its other assets were sold to du Pont, Metz became owner of a majority interest in General Dyestuff.

Metz held control in this manner until March 31, 1931, when he sold his stock interest which was then 4,100 out of 6,000 shares, to D. A. Schmitz for $410,000, which sum was loaned by Ed. Greutert & Cie, Swiss bankers for I. G. Farben, who financed many I. G. Farben deals in this country. D. A. Schmitz held this stock personally for 2 years, then optioned it for a very nominal consideration to the Marion Co. which he personally controlled. The Marion Co. held this option until 1939 at which time D. A. Schmitz sold his interests back to the corporation. A chief reason for this action was receipt of legal advice that Schmitz might subject himself to a stockholder's suit by holding control of General Dyestuff while serving as president of General Aniline. When General Dyestuff acquired this stick, it sold 1,400 shares to E. K. Halbach who had been president of General Dyestuff since 1930 at which time Herman Metz had become chairman of the board of directors. The acquisition of these shares gave Halbach control of the corporation and at the present time he owns 3,150 of the 5,910 shares outstanding. Approximately 25 percent of the shares were purchased by Walter Duisberg, previously identified as a director of General Aniline from 1929 to 1939.

Until 1939 several of the officer directors of General Aniline also served in similar roles in the management of General Dyestuff.

	G. D. C.	G. A. & F.
Rudolph Hutz	V. P. and Dir. 1925–1939	V. P. 1939–1941.
W. P. Pickhardt	Dir. 1938–1939	Dir. 1939–1941.
A. Kuttroff	Dir. 1925–1926	Dir. 1929–1930.
D. A. Schmitz	Dir. 1931–1939	Dir. 1934–1941, Pres. 1936–1941

E. K. Halbach, who has been president since 1930 and who has held control of a majority of the stock since 1939, was formerly an employee of Kuttroff-Pickhardt & Co., and has always been closely associated with I. G. Farben or companies controlled by it.

3. *Swiss companies.*—Ownership of the Sandoz and Geigy companies in this country has continued to remain in the Swiss parents of these companies. However, during the period 1927–29, Ciba Basle transferred many of its holdings in the New World to Anglo-American Chemicals. Then, after the outbreak of the present war, in anticipation of German invasion of Switzerland, two trusts were set up, in Canada and the United States, respectively, to which were transferred Anglo-American Chemicals and Ciba's other enterprises. So that, at the present time, ownership of Ciba, New York, and the 52 percent of Cincinnati Chemical Works held by Ciba Basle, is now in these trusts, which were established irrevocably for 21 years with Ciba Basle as beneficiary.

VI. EFFECTS OF WORLD WAR II

1. *Release of General Aniline and General Dyestuff from export restriction.*—From 1925 to 1939 General Aniline and General Dyestuff lived up to the terms of their agreements. For example, on June 23, 1939, General Dyestuff wrote to Pacific Commercial Co., New York City (exhibit 101):

"We are in receipt of your letter of June 22nd, inquiring for quotation covering 100 kilos RAPIDOGEN DEVELOPER M.

"We regret to advise that we are unable to quote on this item inasmuch as we are not able to export.

"We have taken the liberty of passing your inquiry on to Menzi Company, Inc., 180 Juan Luna, P. O. Box No. 609, Manila, Philippine Islands, which we trust will be satisfactory."

Another example: General Dyestuff to Carr Bros., Inc., New York City, January 30, 1940 (exhibit 102).

"Referring to your letter of January 24th, we regret to advise that we are unable to offer our dyestuffs to be exported to Cuba. We understand, however, that Mr. Albert Eppinger, Apartado 2505, Habana, Cuba, has a large stock of dyestuffs and could possibly offer to your customers."

Digitized by Google

Despite the fact that Cuba had been released by this time, General Dyestuff still showed reluctance to ship, probably because of Eppinger's large stock on hand.

However, in September 1939 the I. G. was cut off from its lucrative foreign markets and authorized General Aniline to export dyestuffs, first, to I. G. agencies in certain British possessions, and, shortly thereafter, to I. G. agencies in Latin America. On September 19, 1939, I. G. cabled General Aniline as follows:

"For Genanilin with reference to article eight of our agreement dated July 31, 1925, in addition to Canada, we release you from export restriction in regard to following countries: Great Britain, British India, Australia, New Zealand, but only for duration of present state of war and as far as supplies to following firms are concerned: I. G. Dyestuffs Limited, 14 Bridge Street, Manchester; 3 Chem. Dyes Ltd, Wittet Road, Ballard Estate, Bombay; Dychem Trading Co., Pty. Ltd., 573 Lonsdale Street, Melbourne; Cone Dyes and Chemicals, Ltd., 15 Courtenay Place, Wellington; C Three. Please confirm."

On September 21, 1939, the following cable was sent from I. G.:

"Our two telegrams of September 19th, replace in first telegram 'for duration of present state of war' by 'until further notice' and act accordingly."

On October 16, 1939, General Aniline Works received a cable from I. G. authorizing it to supply dyestuffs to the I. G. agency in Colombia:

"Referring to your telegram of 29th of last month referring to our telegram of 2nd of this month agree until further notice your supplying dyestuffs to Colombia to our agency only stop Peirsel of our agency will personally call on you in a few days."

On October 28, 1939, ter Meer and Schnitzler, of the I. G., wrote to General Aniline Works confirming these previous cables. The letter states, in part:

"We refer to Art. 8 of our Agreement dated July 31st, 1925, whereby you agreed to confine your manufacture and sale of said products (including i. a. dyestuffs, intermediates and organic auxiliary products but intermediates and auxiliary products only insofar as being products, that are chiefly employed in the manufacture of dyestuffs and colors or for use in dyeing and coloring) to the United States of America, its territories, and Canada.

"In confirmation of our various cables we release you—until further notice—from this export restriction as far as such dyestuffs, intermediates, and organic auxiliary products and the following countries are concerned: Great Britain, British India, Australia, New Zealand, and Colombia, it being understood that your supplies should be restricted to the following firms in these countries (I. G. agencies therein listed)."

Finally, on January 8, 1940, General Aniline received a message from I. G. authorizing it to supply dyestuffs to all Latin-American countries:

"Referring to your telegram of September 29th, our telegram October 2nd agree until further notice your supplying dyestuffs intermediates organic auxiliary products to all Latin-American countries to our agencies only their representatives will call on you probably end of January."

Finally, on January 12, 1940, the same I. G. officials wrote General Aniline, confirming the group of messages sent since the letter of October 28 and listing the I. G. companies in Latin-American countries which General Aniline was authorized to supply:

"We furthermore confirm our cables of December 11th, 1939, and January 6th, 1940, according to which we release you—until further notice—from the export restriction as per acticle 8 of our agreement, dated July 31st, 1935, as far as dyestuffs, intermediates, and organic auxiliary products and the Latin-American countries are concerned, it being understood that your supplies should be restricted to the firms in these countries which are enumerated on the attached list."

These messages exchanged between I. G. and General Aniline from September 19, 1939, to February 12, 1940, when General Aniline was authorized to supply intermediates to Fabrik Rohme in Switzerland, are contained in (exhibit 103).

It was agreed between General Aniline and General Dyestuff that the latter should handle all export business for General Aniline, and letters exchanged between E. K. Halbach, president of General Dyestuffs, and R. Hutz, vice president of General Anline, confirmed this arrangement. The letter of Halbach to Hutz, dated November 1, 1939, stated, in part (exhibit 104):

"Confirming conversation with Dr. Hutz, we agree to handle all export business for the G. A. W. at 20 percent from our contract prices on dyestuffs and intermediates."

Digitized by Google

General Dyestuff considered it inadvisable to handle these exports directly and made arrangements with Fezandie & Sperrle, Inc., a small importer and jobber of dyestuffs in New York City, to handle these transactions for it on a commission of 5 percent off prices quoted to the customer (exhibit 105). At this time one Gerhard Neisser was in the employ of General Dyestuff. Neisser had been employed by I. G. Farben from 1926 to 1938 and had spent almost 10 years in various South American agencies of I. G. Because of his knowledge of the South American market, he was placed in charge of General Dyestuff's export department at this time. When arrangements were made by General Dyestuff with Fezandie, Neisser was placed in charge of Fezandie's newly organized export department. However, until April 1, 1941, Fezandie export offices were located in General Dyestuff's building, and also until this date Neisser's salary was paid by General Dyestuff.

Fezandie & Sperrle exported for General Dyestuff to I. G. agents, or successors thereto, when these agencies were placed on the British blacklist. Certain of Fezandie's connections in South America were established by Alfredo Moll, former submanager of the I. G.'s agency in Buenos Aires, liaison for the I. G. throughout Latin America (exhibits 106 and 107). When many of these companies were blacklisted by the State Department, beginning in July 1941, pursuant to the President's Executive order and proclamation, Fezandie sought new agents to which products were shipped until they in turn were blacklisted. At the present time about 18 consignees of Fezandie have been blacklisted.

By far the largest portion of dyestuffs and dyestuff products exported by Fezandie have been manufactured by General Dyestuff. In all instances, General Dyestuff has sought to match the products formerly supplied by I. G. During the years 1940 and 1941 Fezandie exported approximately $3,000,000 of dyestuffs to Latin-American countries (exhibit 108).

2. *Release of Swiss companies.*—The Swiss representatives in this country also adhered to the terms of the restrictive agreements they had entered into with their parent companies in Basle, by the terms of which they were restrained from selling outside of the United States and Canada. For example, C. W. Mahnken, of Geigy, on August 13, 1937, referred an inquiry of National Development Co. in Manila to the parent company in Basle; thus (exhibit 109):

"We are very grateful for your inquiry of July 16th. Our Franchise does not call for our accepting business outside of the United States and Canada and therefore we are obliged to turn your inquiry over to our Home Office in Basle, Switzerland, Messrs. J. R. Geigy, S. A., from whom you will hear directly or through their representative assigned to that territory.

"We feel quite confident, being the oldest manufacturers of dyestuffs, that we are in an excellent position to attend your needs and above all, to assist you in these first stages.

"Will you please bear with us until Basle is able to get a reply to you."

And when Geigy, Basle, learned from I. G. Farben that Geigy, New York, had approached certain I. G. customers in Cuba in 1937 and had attempted to export large quantities of dyestuffs to that country, it issued a stiff reprimand. In a letter January 18, 1937 (exhibit 110), Moerikofer (in charge of Geigy, Basle's foreign sales) wrote to Walter Saenger, vice president of Geigy, New York.

"We should like to add that naturally we do not want to disturb the Cuban business of our friends (I. G.), the more so since in the crucial period we did no business in Cuba. In case you find that the complaints are well founded, will you please see to it that these disturbances cease." (Original in German.)

And on March 8, 1937 (exhibit 111), the same writer stated:

"* * * We repeat, therefore, that for reasons well known to you, we do not wish to expand our business in Cuba and would ask you to confirm that you have given the necessary instructions." (Original in German.)

Later in this same year, on July 30, 1937, Moerikofer made a similar complaint with reference to Colombia (exhibit 112), where Geigy, New York, had apparently offered certain sulfur black dyes.

"* * * The German I. G. claims that it is doing a substantial business in Sulfur Blacks down there, and asks us therefore to instruct New York not to disturb their business." (Original in German.)

In 1940, however, the Swiss companies in Basle decided to take advantage of the facilities for export possessed by their American subsidiaries. On July 11, 1940, Geigy in Basle informed Geigy in New York of this decision (exhibit 110):

"It has been decided here that in view of the present international circumstances the Cincinnati Chemical Works should for the time being be used as a

Digitized by Google

source of supply for different export markets, for which shipping facilities from Basle do not exist for the moment. Such markets are: Great Britain, British India, Dutch Indies, Latin America, Australasia, China, Japan, South Africa.

"As we know perfectly well that the C. C. W. have no adequate staff for dealing with such purely commercial matters, we have further decided to ask you to take care of such shipments as long as the present circumstances exist.

* * * * * * *

"Considering that we do in no way wish to interfere with the U. S. A. business, there has been decided that the maximum volume of sales to foreign countries should for your firm not exceed $150,000 p. a. In case incoming orders exceed this amount you would first have to approach us before executing them over the above limit.

"We expressively state that there is no limit as to the range of colors which can be shipped. We however reserve to ourselves to give detailed instructions to our representatives. As far as "allocated dyes" are concerned, the idea is that you will be authorized to draw your supplies of such dyestuffs for export from either Ciba or Sandoz at the same prices at which they receive them from the works, whilst you will supply them with such colors on the same price basis. Such invoices will have to be specially marked "for export business" so as to avoid any collision with the American legislation.

"We are at your full disposal to answer any questions you might want to raise in this connection and wish to thank you for the cooperation in this imporant matter, which we are sure you will be glad to lend."

3. *Change in directorate of Cincinnati Chemical Works.*—I have already mentioned the fact that Ciba, Basle, placed its American interests, including Ciba, New York, and its 52 percent interest in Cincinnati Chemical Works in trust, in order to avoid, if possible, seizure by the Alien Property Custodian of Canada (and more recently the United States), should Germany take over Switzerland.

Late in 1940 it was decided in Basle that the directorate of Cincinnati should be Americanized. Until this time only one of the nine directors was a citizen of this country, the other being officials of the parent organizations in Basle.

Accordingly, all but two of the Basle directors resigned, and were replaced by officials of the American representatives and the trustees in common of Ciba's American trusts. George Hardel, president of Cincinnati, continued as director, and Oscar Frey, manager of Cincinnati, was also added.

Exhibits 114 and 115 indicate the negotiations between Cincinnati and its Swiss owners prior to the changes noted.

4. *I. G. Farben takes over Kuhlmann.*—When Hitler's legions marched into France, his economic retinue closely followed the military. A new corporation, Societé Anonyme de Matieres Colorantes et Produits Chimiques Francolor (or merely Francolor), was organized in late 1941. To it Kuhlmann and its associated firms transferred their properties, in return for stock. Then, these companies turned over to I. G. a total of 51 percent of Francolor stock, in proportion to their own holdings, and received, in exchange, shares of I. G. stock. A special statute passed December 10, 1941, authorized the constitution of the new company.

It was provided that a Frenchman should always be president of Francolor, and this was deemed to equalize control. It was also provided that all prior agreements between the I. G. and the French were canceled, not merely suspended, which is the usual consequence of war on cartel agreements of this type.

Exhibit 116 is a clipping from the New York Times, December 22, 1941, announcing the new agreements.

VII. THE DYESTUFF INDUSTRY IN THE UNITED STATES

Our attention has been devoted for some time to the affiliation of the principal American manufacturers with the members of the European cartel, and the manner in which the agreements reached by these parties have influenced and affected commerce in dyestuffs in this country. Participation by General Aniline and the Swiss companies in the American market has been estimated at 40 percent and this has been the case for a number of years. This phase of the discussion will deal with the organization of the domestic market in more detail concerning the manner in which the dominant dyestuff manufacturers have attempted to control it, the means employed, and the results accomplished.

Earlier in the statement attention was directed to the trend toward consolidation of producers within particular countries, and the observation was made that during the period 1919–29 the number of manufacturers in the United States

Digitized by Google

decreased from 90 to 49. American Cyanamid acquired the Calco Chemical Co. in 1929 for $2,542,000, thus entering the dyestuff field. Calco in turn bought out 20 more independent dyestuff companies by 1938. The expenditures for these, plus other chemical company acquisitions not directly in the dyestuff field, amounted to $61,000,000.

By and large, about 90 percent of the dyestuff business transacted in the United States is controlled by General Dyestuff, du Pont, Allied, American Cyanamid, and the Swiss companies.

The colors, shades, and types of dyestuffs manufactured by companies such as du Pont, General Aniline, or Allied, number in the thousands. Consequently, even the largest company does not manufacture a complete line of all colors for all purposes. All intermediates from which final colors are manufactured are likewise not all made by each major color manufacturer. In fact, all dyestuff manufacturers are dependent to some extent upon competitors for intermediate products. Under such conditions it is not surprising to find close working relationships between the handful of companies that do 90 percent of the dyestuff business.

For example, the following situation is typical. Color orange XX may be made from the intermediate beta naphthol which Calcol makes in large quantities. There is a substantial market demand for orange XX and the cost of manufacture decreases rapidly with quantity manufactured. Consequently, if du Pont, General, Ciba, National, etc., all make the product the return to the industry will not be as great as if only one makes it. Since Calco makes beta naphthol from which the orange XX is made, it is the logical manufacturer, and Calco will make all the orange XX and sell it for resale to the other major manufacturers. In turn, other major manufacturers will have their particular products which are sold through the other manufacturers in the same manner. By such arrangements the danger of price cutting and low-profit margins is minimized and everyone is presumed to be better off. Everyone but the outsiders and the consumers. This procedure is so widespread in the dyestuff industry that we find the rather unique situation wherein the largest customer of any one major dyestuff concern is a "competing" company. In the year 1939, for example, du Pont sold dyestuff and intermediate products to General in the amount of $1,449,804, and General sold to du Pont in the amount of $756,024 (exhibit 117).

Inasmuch as each major producer or seller is a customer of each other major producer or seller, the exchange of information concerning prices, products, and other market information for purposes of price stabilization is greatly facilitated. Methods of maintaining uniform prices and products will be explained in the subsequent secton. The sales managers of the several companies are in almost constant touch with each other. A document (exhibit 118) dated October 29, 1935, by Mr. Chandler, of du Pont, to the New York branch, states in part: "We usually talk to General 2 or 3 times every afternoon."

Such close working arrangements not only result in hardship on consumers but it makes the role of a small independent dyestuff manufacturer almost impossible, for the must not only buck the strength of a large competitor but the combined force of 90 percent of the market.

Also, at some stage of manufacture a small producer is going to be dependent upon one of the large competitors for some of the intermediate products from which the final product is made. Control of large-scale operation in the manufacture of a few basic intermediate products can effectively balk the activities of the most efficient small producer. The following situation is a typical example in this industry:

A small manufacturer "A" attempts to make six or seven selected naphthol colors with a relatively small investment. The principal intermediate necessary for their manufacture is a product B. O. N. (beta-oxy-naphthoic acid) for which "A" has one potential source who will sell him in very limited quantities. Not wishing to be restricted and wanting to overcome the constant danger of a price squeeze, the manufacturer decides to attempt the manufacturer of B. O. N. This step is undertaken and the company now has an investment in the manufacture of the intermediate which is several times greater than that required to make the finished dyestuff. But B. O. N. must be made from beta naphthol for which he has two sources from whom he can buy. Now he is up against the same situation as he was before, only worse, because he has a greater investment and more to lose and he cannot possibly go into the manufacture of beta naphthol without expanding far beyond his means.

Contrast this with the following example pertaining to large manufacturers in their arrangements on intermediate products. Du Pont uses about one

Digitized by Google

half of the phthalic anhydride consumed in this country, but produces only a relatively small proportion all for its own use, selling none. On the other hand it procures large supplies from the National Aniline & Chemical Division of Allied Chemical & Dye Corporation, American Cyanamid Co., and Monsanto Chemical Co., at a special price considerably below the market price which other manufacturers have to pay. Since the passage of the Robinson-Patman Act this transaction has been handled under a special bailment arrangement whereby certain facilities of National are set aside for du Pont who furnishes the naphthalene from which the phthalic anhydride is made. The effect of this arrangement is the same as the old special price and National has kept its best customer without having to drop the price.

Another example of the relationships existing between the major firms is the close cooperation on prices. This is indicated in exhibit 119, a letter from Mr. Talbert to Mr. Kerr, both of the National Aniline & Chemical Co. (now a division of Allied), dated June 12, 1938. In part:

"Du Pont have been requested to furnish Calco with prices on the following products. The prices and agreements set down are du Pont's suggestion in regard thereto, on which they await our advice as to whether or not we have any objection to them."

The attitude of major companies toward firms which do not maintain prices is indicated in a letter of July 16, 1937, from Mr. Ludwig, president, to Mr. Talbert, general manager, both of National Aniline & Chemical Co. (exhibit 119–A). In part the letter reads:

"I have read these reports with interest, especially that of Phoenix Color and Chemical Co. Both the leading men are ex-Calco employees, and this may be the answer to Calco's selling them intermediates. It is very difficult to see any sense in this arrangement because Phoenix Color and Chemical Co. have quoted very low prices for acetate silk colors without any necessity of doing so. * * *"

Another letter passing between two small dyestuff firms indicates the restrictions under which they operate. A letter dated November 27, 1940, from Mr. R. W. Cornelison, of the Peerless Color Co., to Industrial Dyestuff Co. referring to possible sales to a large customer at dealer prices states (exhibit 119–B):

"Very naturally I could not do that without getting into trouble both with our dealers and with large manufacturers. They watch us and our prices all the time. We have not been accused of cutting prices but we have been accused of sending out stronger type than they thought we ought to. We have had some controversies on this subject with the two largest dye manufacturers. Doubtless you have had similar experiences."

1. *Price uniformity and stability.*—When comparing prices at which dyestuffs are sold, it is also necessary to relate the strengths of the respective products. The reason for this is that the strengths of particular colors may vary considerably and, therefore, to speak merely of their prices would not be an accurate reflection of their relative values.

The principal manufacturers in dyestuffs have been able to control the price structure of their industry in two ways: By actively fixing prices by agreements among themselves, and by a complete interchange of samples, prices, and relative strengths of products which they offer for sale. This interchange has been facilitated by the intercompany purchasing arrangements previously referred to.

A letter from officials of Geigy, Basle, to Walter Saenger, vice president of Geigy, New York, dated December 7, 1939, refers to price discussions among certain American manufacturers (exhibit 120). Another letter dated April 26, 1933, from Geigy, New York, to Geigy, Basle, refers to a conference with certain competitors concerning prices. A translation of this part of the letter originally written in German states the following (exhibit 121):

"The conference which we have had with our competitors in regard to raising prices has had no result for the time being. One should think that after the lean years the domestic manufacturers should be eager to avail themselves of the opportunity to raise prices. However, there seems to be another reason why at the moment they are not inclined to agree to such a step. They figure that because of the foreign-exchange situation importers will have to ask for higher prices for their products which would create an unfavorable impression upon customers. The domestic manufacturers think that this will be their opportunity to eliminate the competition of imported products. * * *"

The exchange of samples, prices, and relative strengths was complete among these principal manufacturers. Sometimes a sample would be sent from one to another as the result of a direct request; on other occasions a company

Digitized by Google

putting a new product on the market, where introducing a variation of a regular product, would forward sample thereof to other interested producers. Generally the product of one company would be adopted as a so-called "trade standard," i. e., the product to which manufacturers of similar products would attempt to relate their own color. The recipient of a sample would analyze it carefully and subject it to various tests in order to ascertain whether the trade standard had been matched. If a product proved to be overstrength, its manufacturer would be notified with the recommendation that the product be "brought into line." Upon receipt of this criticism the original manufacturer would attempt to follow this friendly advice and correct the strength of his product unless to do so would disrupt the operation of machinery or organization.

Exhibit 122 is a report of a list of tests made on various colors. At the top of each page the standard is listed. In a column down one side of the page are various prototypes of the standard color, and opposite the name of each prototype or similar product is a figure indicating the comparative strength of said prototype in relation to the standard product. These particular charts relate to products offered for sale in Canada, but the same type of interchange takes place in the United States. A letter dated October 26, 1939, from du Pont to Geigy, New York, states that (exhibit 123):

"Strengths of products in Canada are identical with those in the States with the exception of two or three colors, for example: Alizarine Sapphire B N in Canada is only 95%, Alizarine Cyanone Green G Ext. is 90%, Wool Yellow Ex Conc is 95%, Auramine O is 95%, as compared with similar products sold in the United States."

One further letter dated October 3, 1940, relating to the Canadian market, in particular to selling prices quoted to Oxford Woollen Mills, Ltd., states (exhibit 124):

"In future, we shall take up direct with you the question of selling prices so as to avoid a repetition of quoting different prices on the same product."

The manner in which trade standards have been established is clearly indicated by a letter dated November 19, 1940, from Eric J. Monaghan, assistant sales manager, dyestuffs division, organic chemical department, du Pont, to Geigy Co. (exhibit 125):

"Confirming telephone conversation of today, it has been suggested that your Acid Violet 6B Conc. be used as market type for the red shade of Acid Violets and our Pontacyl Violet C4B as standard for the green shade.

"We would suggest that you send 1 lb. samples of your product to du Pont, Calco, Ciba, Sandoz, General, and National. We have contacted Moody and he is agreeable to this set-up. We suggest that you contact the remaining people.

"As competitive types of your product we would suggest that you get samples of—

Calcocid Violet 4BXN	(Calco)
Acid Violet 4BNS Extra Conc.	(Ciba)
Acid Violet 4BNS Conc.	(Sandoz)
Acid Violet S4BA	(General)
Acid Violet S3BA	(General)
Acid Violet 4BN	(National)

"All of these samples have been tested previously in our laboratory and for your information we give you the following reports:

	Du P.	Nat.	Gen.
Pontacyl Violet C4b (Du P.)	100	100	100
Pontacyl Violet S4B (Du P.)	100	100	----------
Pontacyl Violet 4BL (Du P.)	100	105	----------
Calcocid Violet 4BXN (Calco)	80	85	95
Acid Violet 4BNS Ex. Conc. (Ciba)	95	93	102
Acid Violet 4BNS Conc. (Sandoz)	90	93	97
Acid Violet 6B Conc. (Geigy)	100	100	102
Formyl Violet S4BA (Gen.)	83	85	98
Formyl Violet S3BA (Gen.)	80	80	98
Wool Violet 4BN (Nat.)	100	100	105
Wool Violet 5BN (Nat.)	90	100	100

"All of these tests were made by the acid method."

(See note on exhibit regarding comment by receiver of letter.)

Digitized by Google

Interesting enough, there is no indication on the face of this letter that the writer was Mr. Monaghan except for a small slip of paper with the initials E. J. M. thereon, which was clipped thereto. Investigators from the department found other letters identified in a similar manner.

A letter dated September 29, 1938, from "S. C. M." (who is apparently Sidney C. Moody, sales manager of Calco) states (exhibit 126):

"I am sending you separately product samples of Black: (1) Trade Standard, Plutoform Black CA Ex., $.64; (2) Our type, Fast Formyl Black W, $.45.

"The latter is 70% of the former."

This letter indicates that Moody was submitting not only the trade standard but the type manufactured by Calco. The price of the trade standard as indicated was 64 cents per pound, and of the Calco type 45 cents. Moody states that the latter is 70 percent of the former; so is its price, and repeated comparison has proved that price varies directly with strength.

The following excerpts from correspondence indicate the type of communication exchanged after the testing of samples. A letter from Monaghan to C. W. Mahnken, assistant sales manager of Geigy (the author is indicated in the same manner disclosed previously) dated March 8, 1937 (exhibit 127):

"In reference to your letter of February 25th, we have tested the sample which you submitted of Supranol Brown 5RH against the sample which we received from General direct, also against our Du Pont Neutral Brown RS (which we purchase from you) and our new type of Du Pont Neutral Brown 2RS. We consider all four products equal in strength to each other.

"We are sending you under separate cover a sample of our new type of Du Pont Neutral Brown 2RS and would appreciate your comments in this regard."

Another letter from Monaghan to W. F. Zipse, vice president of Geigy (the author of this letter is indicated by reference to particular product as "our") (exhibit 128):

"We recently received from you various samples of Direct Green. You may be interested in our laboratory's report on these samples.

"We find that your Diphenyl Green BB Supra ($.53/.50) is in the ratio of 80:100 vs. our Pontamine Green BX ($.43/.40) and equal to 80 parts Amidine Green M Special ($.53/.50). This brings your product in line with these types.

"Diphenyl Green BY/Supra, however, is in the ratio of 86:100 against Amidine Green M Special. Your selling price is $.53/.50 which makes this type better value than the Campbell product.

"Your Diphenyl Green Bluish Conc. ($.63/.60) is similar to Pontamine Green 2GB Extra. We consider your type in the ratio of 80:100 against our product. Our price is $.42/.40 which makes our product better value.

"Your Direct Green GB/Conc. ($.63/.60) is 84:100 vs. Amidine Green GX and Pontamine Green GX (both $.53/.50) which is approximately money value.

"Your Diphenyl Green C Supra ($1.00) is very much yellower and brighter than Pontamine Green GX or Amidine Green GX and we have compared this against our Pontamine Green 2Y ($.45). We find your product in the ratio of 50:100 vs. ours which would make your product not quite as good money value as our type.

"I would like to discuss these types further with you on my next trip to New York. In the meantime I thought you might want to talk this over with Harry Spatz."

To du Pont's reactions Geigy wrote on June 1, 1938, as follows (exhibit 129):

"I hastily want to make a correction. I originally sent you this sample, which is a works standard, for reasons which you well know but neglected to indicate in my original letter that we sell 90% of this color at $0.53 per lb. bbls. spot, $0.50 per lb. bbls. contract, which places it a few percent out of line with your type. I planned originally to talk to you on the telephone and give you this explanation but neglected to do so, and hasten to make this correction.

"I think you will agree, therefore, that on the strength of present tests and past positive tests in the original set-up that this standard is practically in line—it being a matter of dispute, of course, on strength because of the shade differences.

"*Diphenyl Green Bluish Conc.*—Your report is correct—we are considerably out of line on this product.

"*Direct Green GB Conc.*—We agree with you.

"*Diphenyl Green C Supra.*—We appreciate your report on this.

"This refers to your letter of May 13th."

Digitized by Google

An interesting letter from du Pont to Geigy dated October 4, 1940, is the following:

"We refer to your note of September 30th submitting sample of Diphenyl Fast Blue GLN Conc.

"We have tested this sample and find it equal in strength to the new standard of National's Solantine Blue FF and our Pontamine Fast Blue SFL."

On the face of this letter a representative of Geigy inscribed the following note:

"This correspondence brought about by us finding National 10–15% strong a few months ago—Du Pont found National over but not to the extent we did—National cut their type—Du Pont okayed it—we still found it 5% too good. In tests on first National sample Du Pont had found us 5% thin—U. S. Dyestuff found us 5–7 thin against General, who, it seems, now have the greenness of our type. We confirmed U. S. Dye findings—In view of all the aforementioned it was decided to bring our selling strength to 63 parts color—HCS & A. E. still insist that shade redness is being taken for strength. However, if our greenness can be taken for weakness, we should bring up the strength while we have the opening. * * *"

A very important result of this interchange of information about products in addition to its stabilizing effect on domestic prices has been that it gave I. G. Farben easy access to complete knowledge concerning American production. Because General Aniline (and General Dyestuffs) has been one of the leaders of the industry in this country, it naturally obtained all such information. Product samples of samples received, or at least results of tests conducted by General Aniline, were always forwarded to the I. G., which resulted in putting the latter company on notice concerning the operations of the domestic industry. Similarly, the Swiss members of cartel were constantly informed by their affiliates in this country.

As a result of the cooperative control exercised in the dyestuff industry it has been an especially lucrative field. The dyestuff business is one of the most profitable in this country. Because most of the dyestuff business is not handled by separate companies but rather as a part of more extensive chemical operations with which dyestuffs are so closely associated, figures on rate of return are generally obscured in financial reports. One manufacturing company, however, which is in the dyestuff business only, declared a 100 percent stock dividend and a 20 percent cash dividend in 1935 and in subsequent years did not fall below a dividend of 25 percent. Even these figures do not reflect the full story as they do not include the profits of the selling organizations but only the manufacturing operations.

The high level of prices in the United States is clearly shown by the following excerpt from a letter of instruction to the du Pont office in the Orient (exhibit 131):

"In China, we are giving them two prices—maximum and minimum. The maximum price is the domestic price, plus $0.02 per pound for freight and shipping charges. The minimum price is half-way between the cost and the domestic selling price, but must be at least 30% above cost."

Dyestuff prices are also very stable. Many dyestuff prices have not changed over a 10-year period. A check of the prices of one dyestuff company indicated that on over half of the colors reported the price had not changed in the last 5 years.

Thus we have a dyestuff industry in the United States which has been so closely controlled that prices have been stabilized at higher levels than in many countries in which cartels have had complete legal sanction. Nor has this been primarily due to a high cost of production in the United States as compared to Europe. In the first place labor costs are relatively minor in dyestuff production and furthermore, American producers have continued to sell in many foreign markets at levels substantially below the domestic prices.

Normally such a condition makes a field desirable for newcomers, but this threat has been effectively eliminated by cooperative control of prices and control of production and sale of intermediates and raw materials.

The importance of intermediate production cannot be over-emphasized. In addition to being the key to the general market situation in the dyestuff industry, the manufacture of intermediates is vitally significant in time of war because of the close relationship between dyestuff production and the production of war chemicals and explosives. Each small dyestuff manufacturer who has been eliminated or restricted has thus meant just that much less potential capacity for war production.

Digitized by Google

EXHIBIT No. 137

SYNTHETIC RUBBER

Statement by Robert M. Hunter

During the First World War, Germany manufactured and used a considerable quantity of synthetic or ersatz rubber. It was made of dimethylbutadiene, was called methyl rubber, and was not particularly good for tires. An understanding of synthetic rubber requires some consideration of the chemistry of this product, and this in turn necessitates some knowledge of the production of hydrocarbon gases. A brief explanation is given in appendixes 1 and 2, exhibit 1.

In the late twenties I. G. Farben in Germany and du Pont in this country were experimenting with new types of synthetic rubber. Du Pont's process was based upon a discovery by Father Nieuwland of Notre Dame that divinylacetylene could be made from acetylene. Carothers of du Pont built upon this discovery and there was evolved the process of making, from acetylene and hydrochloric acid, chloroprene. The chloroprene is polymerized, i. e., small molecules are caused to unite to form large molecules under the proper conditions of temperature and pressure and in the presence of a catalyst.

The synthetic rubber thus produced was first distributed on a commercial scale in 1932 under the name Duprene. It smelled of acetylene and when in 1937 a means was discovered of making it odorless the name was changed to Neoprene. It is relatively high priced, having sold at various prices from $1.05 per pound down to 50 cents per pound. It is used chiefly for specialty purposes in which its oil resistant and other exceptional qualities have made it possible for it to command a price three or four times as great as that of natural rubber (exhibits 2 and 3).

During the same period, from 1925 on, I. G. Farben was developing its buna rubber. Originally in the late twenties and early thirties buna was made by polymerizing butadiene in the presence of sodium (natrium). The word buna was coined from the beginning syllables of these two words. Among the earlier types of buna were those called buna 85 and buna 115, the numerals indicating the molecular weights of 85,000 and 115,000. The butadiene used by I. G. Farben was a gas produced from acetylene, which in turn was a product of coal and lime. Before the middle of the thirties I. G. Farben discovered that the straight butadiene polymer was not as good a synthetic rubber as either of two copolymers which it subsequently developed. One of these was a copolymer of butadiene and styrene in the proportion of 3 to 1 and is called buna S. The other is a copolymer of butadiene and acrylonitrile, in the proportion of 3 to 1, and is called Buna N, or, more recently, perbunan. Buna N is oil resistant and commands a high price as a specialty rubber comparable to Neoprene. Buna S has been widely used in Germany and will be used in this country as a tire material.

I. G. Farben also developed a product which in a variety of forms was marketed under the general name of Oppanol. In this country the name was changed to Vistanex when applied to the material when used outside the oil industry, such as fabric coating, wire insulation, etc. Vistanex in a certain range of molecular weights is similar to rubber and differs from rubber in that it cannot be vulcanized. It is made by polymerizing isobutylene, a refinery gas, and the general name "polybutenes" is sometimes used instead of the trade name Vistanex (exhibit 4).

Standard's butyl rubber is a copolymer of isobutylene and a small quantity of butadiene or some other similar diolefin. The patent application was made in 1937, and, although it is the cheapest and most easily produced of any of the synthetic rubbers, not a pound of it has been produced for commercial use in this country to this date.

There are many other types of synthetic rubber or rubber-like materials, most of which are described in Department of Commerce Circular C 427, published in 1940 (exhibit 5). Butyl rubber is not described in the circular, nor are the following: Goodyear's Chemigum, Goodrich's Ameripol, and Hycar OR.• The latter are the products of a company owned jointly by Goodrich and Phillips Petroleum Co.

Digitized by Google

SUMMARY OF STANDARD'S INTEREST IN SYNTHETIC RUBBER

Standard Oil Co. of New Jersey has been connected with the synthetic-rubber development in this country from the beginning. In the late twenties it allied itself with I. G. Farben in a series of cartel agreements looking toward monopolistic control in various fields. In 1930 the two companies made an agreement for the joint development of new chemical processes, one of which was to be synthetic rubber.

Abortive negotiations were had with rubber companies in this country in the early thirties. In 1935 I. G. Farben and Standard proposed the formation of a joint company with du Pont in order that buna and duprene might be exploited without competition. The plan did not mature.

After Hitler's 4-year plan went into effect, in 1937, buna was rapidly developed in Germany, and foreign exploitation of it was forbidden. Standard made a deal with I. G. Farben in 1938 to trade Standard's new butyl rubber for I. G. Farben's promise to try to get Hitler to permit exploitation of buna in the United States. From the fall of 1938 to the fall of 1939 the two companies led American rubber companies to believe that the German buna would be made available to them.

After the outbreak of the war, Standard announced that I. G. Farben had completely withdrawn from the buna development in the United States. Standard planned one big company which it would dominate and in which other companies interested in synthetic rubber would have minority interests. As a first step, it prepared and submitted a license agreement to the four major rubber companies which, if accepted by them, would have increased the dominance of Standard in the synthetic rubber program. As a threat to force acceptance of the license it announced its own butyl rubber and held it out as the cheapest and most easily made synthetic rubber. In fact, butyl can be produced for approximately one-third of the present price of natural rubber, although this fact was not disclosed. Standard kept the process a secret in this country from 1937 to June 1940—for more than 2 years after giving it to Germany.

Firestone and United States Rubber accepted the buna license and were allowed to participate in testing butyl. Standard attempted to force Government financing for a large scale buna program intending to reserve its own investment for butyl, which it was sure had greater possibilities. It expected to force recognition of its buna patents through the Government-financed program. Its testing of butyl for tires was of such a character as to shed little light on its real possibilities except to show that a fairly satisfactory tire could be made of this material. This was in 1940.

Goodrich and Goodyear, having their own synthetic rubber developments, refused to accept the Standard license for buna and were not allowed to test butyl. Furthermore, Standard threatened to sue them for patent infringement in connection with buna and actually sued Goodrich.

Pearl Harbor forced the formation of a Government-sponsored pool for making synthetic rubber. Standard withheld its butyl process from the pool and never licensed anyone in the United States to use its butyl patents.

The consent decree of March 25, 1942, forced the free licensing of the buna and butyl patents, with a reasonable charge for the know-how on butyl. Under present plans Standard will make 60,000 tons of butyl rubber out of the total 800,000 tons of synthetic rubber contracted for by the Reconstruction Finance Corporation.

ORDER OF STATEMENT

The statement which follows will take up the various phases of the synthetic rubber story in the following order:

Part 1. Standard, I. G. Farben, and buna.
Part 2. Butyl rubber.
Part 3. A pattern of deception.
Part 4. Suggestions for action.

PART 1. STANDARD ENTERS A PARTNERSHIP WITH I. G. FARBEN

Standard's first contractual relationship with I. G. Farben took place in 1927 when it acquired from the German firm the right to exploit the United States patents covering hydrogenation of oil (exhibit 6). On November 9, 1929, this

Digitized by Google

contract was superseded by a series of agreements in which the two great companies staked out the world as their joint domain (appendix 3, exhibit 7). I. G. Farben was to have the control in the chemical field and Standard in the petroleum field outside Germany. In a letter to E. F. Johnson, Standard attorney, dated July 27, 1936, Frank A. Howard, vice president of Standard and president of Standard Oil Development, summarized the relation between the two companies as follows. I quote only two paragraphs:

"The I. G. may be said to be our general partner in the chemical business as to developments arising during the period beginning in 1929 and expiring in 1947. The desire and intention of both parties is to avoid competing with one another and by these means to permit their technical organizations to cooperate wholeheartedly to their mutual advantage. This arrangement is set forth very clearly in the Division of Fields agreement. It is always dangerous to summarize arrangements which are themselves the briefest possible accurate summary of all the subject matter to which they relate but an understanding of the relationship of the parties involved in this loose general partnership on chemical business is as follows:

"1. The assumption is that the I. G. are going to stay out of the oil business proper and we are going to stay out of the chemical business insofar as that has no bearing on the oil business * * *" (exhibit 8).

One of the other agreements signed on November 9, 1929, by I. G. Farben officials and by Walter C. Teagle, then president of Standard, now chairman of the board, contains this provision:

"In the event the performance of these agreements or of any material provisions thereof by either party should be hereafter restrained or prevented by operation of any existing or future law, or the beneficial interest of either party be alienated to a substantial degree by operation of law or governmental authority, the parties should enter into new negotiations in the spirit of the present agreements and endeavor to adapt their relations to the changed conditions which have so arisen" (appendix 4, exhibit 9).

The consent decree of March 25, 1942 (exhibit 10), forbids continuation of the 1929 agreements, and thus "the performance of these agreements" is now "restrained or prevented by operation of existing law."

THE PARTNERSHIP INCLUDES SYNTHETIC RUBBER

In 1927 synthetic rubber was mentioned as an important problem. The Standard European representative wrote Walter Teagle on November 24, 1927: "* * * one of the members of the shareholders' committee of the I. G. recently stated that the I. G. had developed a process of commercial production of synthetic rubber. I presume that this is one of the problems to which Bosch referred when he said that the liquefaction of coal was only a side issue for the I. G. and that they were working on two or three other problems which were of much greater importance to the Company" (exhibit 11).

Early in 1928 Standard commenced negotiations with I. G. Farben with regard to synthetic rubber. R. T. Haslam, of the Standard board, wrote Frank A. Howard, then an officer and now president of Standard Development, on January 11, 1928:

"Would it be well to have Mr. von Riedemann (Standard European representative) take up with the I. G. the possibility of our being 'in' on the synthetic rubber picture here in America?" (exhibit 12).

That the buna process was intended from the beginning to be exploited in this country by joint action of the two companies is evidenced by the following statement from a letter written by Howard on February 6, 1940:

"The interest of Standard Oil Co. of New Jersey in the buna process dates back to the original agreement of 1929 between I. G. and Jersey. Pursuant to this general agreement, the parties undertook to cooperate in the production of certain new products from oil and gas raw materials in a jointly owned American company which was organized to administer the joint interests of the parties in these fields. The buna synthetic rubber development (to the extent the product was made from oil and natural gas raw materials) was recognized by both parties as coming within the field of this corporation" (exhibit 13).

As will be shown hereafter the buna patents were never acquired by corporations in this country until the summer of 1940, and the know-how for making buna was never given by I. G. Farben at any time.

Standard's desire to cooperate with the German I. G. in a partnership arrangement on synthetic rubber is indicated by its apparent desire to aid the German

Digitized by Google

firm as against du Pont. On April 30, 1930, E. M. Clark, vice president of Standard, wrote Dr. Carl Krauch of I. G. (subsequently a high official in the Nazi government):

"I have just learned in an offhand way that the du Pont interests are doing considerable research work on producing artificial rubber from Butadiene. I am giving you this information, which I believe to be accurate, with the thought that you will wish to carefully review your patent and applications for patents situation" (exhibit 14).

EARLY NEGOTIATIONS BETWEEN RUBBER COMPANIES AND I. G. FARBEN AND STANDARD

In September 1930 Standard and I. G. made the Jasco agreement for joint exploitation of new chemical processes (exhibit 15). Pursuant to this agreement, Jasco, Inc. (Joint Account Study Co.), was organized with each company holding 50 percent of its stock.

In the period beginning in April 1932 and ending in January 1933, Jasco, in behalf of Standard and I. G. Farben, carried on a series of discussions and communications with B. F. Goodrich Rubber Co. The idea underlying the discussions was that Goodrich should take samples of I. G. Farben's buna and experiment with the material endeavoring to ascertain its usefulness in various products. The negotiations terminated with a letter of refusal by R. T. Haslam, vice president of Jasco., to S. B. Robertson, vice president of Goodrich, dated January 20, 1933 (exhibit 16).

On the same date negotiations were opened with General Tire & Rubber Co., (exhibit 17) which eventually resulted in a contract being signed on October 16, 1933, between Jasco and General (exhibit 18). The contract merely provided for General's experimenting with buna samples to be supplied by I. G. Farben and nothing came of it. In a letter dated December 9, 1933, Howard wrote W. O. O'Neil, president of General:

"You will remember the abortive effort which the I. G. Farbenindustrie made in cooperation with your people some years ago to try to do something with the German synthetic rubber" (exhibit 19).

Goodyear began negotiations in 1933 proposing an arrangement for developing synthetic rubber here on the basis of the I. G. Farben's United States patents and Goodyear's experience and interest in rubber (exhibit 20). After consultations with I. G. Farben, Standard turned down the Goodyear offer on February 23, 1934, stating that their existing commitment (with General) was all that should be made (exhibits 21 and 22).

I. G. FARBEN WANTED DUPRENE

In 1932 du Pont had announced its synthetic rubber Duprene (later to be called Neoprene). The buna rubber at that time was of an inferior quality and I. G. Farben was interested in getting the Duprene rights for Germany and in cooperating with du Pont in synthetic rubber generally. In the earlier part of 1934 I. G. Farben held several conferences with du Pont in Germany and in the United States discussing a tie-up on synthetic rubber. Memoranda of these conferences were found in the files of Chemnyco, the New York representative of I. G. Farben (exhibits 23, 24, and 25). A memorandum by Mueller of Chemnyco tells about a conference that took place on May 18, 1934, between Ewing and Wardenburg of du Pont and Krauch and Mueller of I. G. Farben in Oppau, Germany (translation):

"Ewing said that for the time being Duprene was being used only for special purposes * * * and that du Pont was not interested in using it in the manufacture of tires because in that case it would be necessary to reduce considerably the present price of $1.00 per pound" (exhibit 26).

Documents referring to these negotiations were also found in Standard files (exhibits 27, 28, 29, and 30).

On November 12, 1934, I. G. Farben wrote Hochschwender of Chemnyco its New York representative, as follows:

"The situation in the synthetic rubber field has changed considerably as a result of progress that was made in the last few weeks in processing our Butadiene rubber. After the unsuccessful experiments made by Conti and General Tire, all German rubber firms have been supplied with samples of our synthetic rubber for experimental purposes. *This was done at the request of the Reich Rubber Commissar.* After an astonishingly short *time a small firm succeeded in getting favorable results so far as the use of synthetic rubber*

Digitized by Google

for the manufacture of tires is concerned. * * * [Italics supplied in all cases.]

"If current examinations confirm the usability of synthetic rubber, production will be started. This being the situation, it is possible that we are no longer directly interested in reaching an agreement with du Pont in the synthetic rubber field. We would like, therefore, to keep negotiations with du Pont in suspense and await the further development of our examinations. * * *" (exhibit 31).

HITLER FORCES DEVELOPMENT OF BUNA IN GERMANY

The foregoing statement from the Chemnyco files is corroborated by documents in the Standard files, as hereafter shown.

On January 17, 1935, Howard reported to the Standard executive committee as follows:

"Synthetic rubber—Germany. Recent improvements made it commercially practicable and it will be devoloped for immediate use within Germany. Not yet commercially profitable outside Germany on account of competitive price of natural product unless tests now under way show better wearing qualities than natural rubber" (exhibit 32).

On October 9, 1935, Howard wrote Teagle, who was then president of Standard and is now chairman of the board, as follows:

"Dr. Fritz Ter Meer, one of the Directors of the I. G. who is in this country at the present time, called on me last week to discuss the synthetic rubber process which has been in his charge. *The status of this project is that under the instructions of the economic ministry the I. G. have been endeavoring to force its development as rapidly as possible during the last year.* They have at the present time a plant of 25 tons per month capacity. Within one month this capacity will reach 50 tons per month; within one year it will reach 200 tons per month, and beyond this point the instructions of the ministry are to raise the capacity to one thousand tons per month within three years. As regards quality the situation is as follows:

"The product in its natural form is of very superior quality, especially for tire treads, showing an abrasion or wear resistance 50 to 100% better than that of the best natural rubber. Unfortunately, however, this characteristic is associated with a structure which makes it impossible to handle the rubber on the milling and compounding machines used in present rubber factories. As a matter of fact I do not believe that any large-scale process has ever been developed capable of milling and mixing this product satisfactorily. The synthetic product may be mixed with a softening agent and when so mixed can be handled in the regular rubber machinery but its superior qualities are now lost and it becomes only an ordinary grade of rubber. Despite the most determined efforts, no solution of this problem has been found as yet."

(The complete letter is found in appendix, exhibit 33.)

PROPOSED I. G. FARBEN-STANDARD-DU PONT EXPLOITATION OF SYNTHETIC RUBBER IN THIS COUNTRY

In this same letter of October 9, 1935, to Teagle, Howard stated that *"our I. G. friends* have been following closely the development of the du Pont's synthetic rubber product Duprene or Chloroprene." At a later point he stated:

"The gist of the matter therefore is that the I. G. would like to take over du Pont's Duprene development for Germany and push it on a large scale in place of their own process. That makes the prospects for any successful development of the I. G.'s synthetic-rubber process in the United States rather tenuous for the present."

He then suggested the possibility of working out a deal with du Pont on synthetic rubber through the Jasco acetylene arc process.

On November 1, 1935, Howard wrote Ter Meer:

"I return herewith the chart on costs of rubber which you left with me. *I have discussed this situation with Mr. Teagle and find he has no suggestions to make. He is entirely agreeable to our proceeding along the line planned to try to work out an agreement with the du Pont Company*" (Exhibit 34).

On November 8, 1935, Ter Meer answered as follows:

"I wish to thank you for your letter of November 1st. In the meantime we had our discussions at Wilmington about which Dr. Hochschwender has informed you

Digitized by Google

in a brief way. We have succeeded in obtaining from the gentlemen of the du Pont Company an outline of their ideas about a license on their German patent rights for Duprene although the terms of that license are in their present form not acceptable to us and must be subject to further discussion.

"In particular I wish to give you a summary of what we said about the position in this country. *I brought forward the suggestion that a new company in which Standard Oil Company, du Pont and I. G. were to have one-third interest should be formed to take care of butadiene rubber in the United States.* Each party would bring its patents, processes, and "know how" in the butadiene and butadiene-rubber field to that company and the company when operating under the patents and processes in question would pay a fair royalty to the original owners of the patents and processes. *Moreover, some provision should be inserted in the agreement to secure that operation in the butadiene-rubber field should not be carried out on a mere price-fighting basis against Duprene, but rather on a sound economical basis, for instance, manufacture should start only if and when butadiene rubber would prove equal or lower in cost than Duprene* (which is not likely to come) or butadiene rubber would have particular merits in certain fields of application" (exhibit 35).

Nothing came of the proposal for an I. G. Farben-Standard-du Pont synthetic rubber company. However, I. G. Farben's deal with du Pont concerning the exploitation of Duprene in Germany colored the later negotiations with regard to buna development in United States, as will hereafter appear.

FURTHER DEALING WITH AMERICAN COMPANIES DESIRING TO PARTICIPATE IN BUNA DEVELOPMENT

In the letter of October 9, 1935, from Howard to Teagle, to which reference has previously been made (appendix 5, exhibit 33), there is a statement concerning the desire of R. T. Vanderbilt, head of a New York chemical sales organization, to participate in developing buna rubber. It reads as follows:

"As regards direct efforts to do something with the I. G.'s synthetic rubber in the United States, I recently had a call from Mr. R. T. Vanderbilt. He has picked up enough gossip on this synthetic rubber project from various sources to have a pretty good idea of its status. *He is very much interested in the rubber business and urged me to permit him to take over this synthetic rubber development in the United States on almost any basis.* He is very anxious to spend his money trying to do something with it here and is confident that he has the chemical ability in his organization to contribute things which the Germans could not contribute. I mentioned this to Dr. Ter Meer and we agreed that it is not desirable to bring any outside organization directly into this development on a full scale *because this would entail giving them the benefit of a large amount of technical information which even more than the patent situation constitutes the proprietary value of the synthetic rubber project.*

"I urged upon Dr. Ter Meer however further consideration of the possibility of letting Vanderbilt, on his own initiative and own expense, tackle the problem of endeavoring to find either (a) a softener for the present product which would permit of its being worked on present rubber machinery and without losing its exceptional abrasive qualities, or (b) a modification of the rubber machinery which would permit the rubber mills to use the straight synthetic product at reasonable cost. Dr. Ter Meer will further consider this matter and talk to me again about it before he leaves for Germany. I should like to have him meet you gentlemen at this time. He is one of the strongest men in the I. G. executive organization."

Nothing came of Mr. Vanderbilt's proposal.

In 1936 United States Rubber and Goodyear had again become very interested in participating in the buna development. On November 6, 1936, Howard explained that no activity was taking place here but that in Germany rapid progress was being made and added the opinion with respect to their offers to cooperate with I. G. Farben in the development work, "I doubt very much whether anything useful could be accomplished at this time by cooperation between them and an American rubber company but that the only way to determine this was to discuss the matter directly with the I. G." (exhibit 36). Hochschwender of Chemnyco, I. G.'s New York representative, told Howard, "Under existing conditions the answer given by you would seem to me the only possible one to give from our end" (exhibits 37, 38).

Digitized by Google

HITLER FORBIDS EXPLOITATION OF BUNA OUTSIDE GERMANY

The explanation for the absolute inactivity with regard to buna development in this country in the years 1936 and 1937, is to be found in statements in several documents in the Standard files. Howard made notes on February 10, 1937, of a European trip. The following statement is found in the notes:

"Artificial Rubber

"The I. G. are building a very large capacity for the production of their artificial rubber Buna in Germany. This is an integral and important part of the German Four-Year Plan. The attention of other countries has been thus centered on this development and the I. G. are in receipt of requests for licensing this process. JASCO has rights to this process for the world outside of Germany to the extent that the product is made from oil or natural gas. Under the JASCO contract, however, I. G. being the originator of this patented process controls the license power of JASCO with respect thereto and has a 25% overriding royalty. *Under these conditions I. G. have suggested that we permit them to negotiate not only for their own rights but for the JASCO rights as well, that is the rights on oil and natural gas outside of the United States. This request we have agreed to with the understanding that we will be kept advised of any negotiations in which there is any real question of the use of oil or natural gas as a raw material.* Soon after commercial production begins in Germany we expect to obtain limited supplies for sale in the United States as a specialty at a high price, for the purpose of ascertaining what market for the product might exist here at a profitable price level" (exhibit 39).

In a file memorandum of July 23, 1937, M. B. Hopkins, president of Standard Alcohol, states:

"*So far as I know foreign rights to the product outside of Germany and full information regarding the manufacture, use, etc., of the product have not been released to anyone by I. G. probably because the Hitler Government does not look with favor upon turning the invention over to foreign countries,* and also because the I. G. may fear that if any other concern starts working with their product, they may develop methods of processing, milling, improvements, etc., that might cramp I. G. in the promotion of its own invention" (exhibit 40).

On September 8, 1937, Howard, Hopkins, and Asbury of Standard had a conference with ter Meer, Hochschwender, and Ringer of I. G. Farben in Frankfort, Germany. Ter Meer is quoted as follows:

"Large manufacturing in U. S. not economical. Buna N. or Perbunan only product now available. I. G. cannot very well export Buna N. without clearing with du Pont who withdraw Isoprene [Duprene] in late 1935" (exhibit 41).

On October 1, 1937, Hopkins wrote to a Mr. Moss, apparently a Standard foreign representative who was sailing from New York at about the same time Hopkins was returning from Europe. He states:

"Mr. Bedford [of Standard] may be interested in some information I obtained in Germany regarding the synthetic substitute for rubber 'Beuna.' At a meeting with some of the I. G. officials who are responsible for determining the policy in connection with this product Dr. Termeer, who is a Director of the Company, was very emphatic in stating that he did not consider it advisable to place the responsibility for marketing 'Beuna' in the hands of any one company in the United States. He was positive about this and when alternatives were proposed he was very firm. At the present time the manufacture of 'Beuna' in the United States is not considered economical; costs are entirely too high. *The government does not permit export from Germany except by special government permit in every instance.* So far sample quantities are to be shipped to the following in the United States: Goodrich, Raybestos, Vanderbilt, Goodyear, and Manhattan Rubber.

"The I. G. is going ahead on a very large scale with the production of 'Beuna' in Germany but this is possible only because of Government support and Government determination to be independent of foreign rubber supplies. There are a number of different grades of 'Beuna' and the interest to U. S. firms is confined to utilization for special purposes rather than as a general substitute for rubber" (exhibit 42).

The last statement is not in accord with the facts. In a letter from Duisberg of Chemnyco to ter Meer dated March 26, 1937, he discussed a recent conference with Sebrell, of Goodyear, and stated:

"It is interesting to note Sebrell's statement that he felt that the higher price of Buna would be no handicap in the tire field, in view of its superior qualities.

Digitized by Google

He also mentioned that it was desirable and essential for the United States to develop an independent basis for tires" (exhibit 43).

On April 4, 1938, Howard appeared before the Standard executive committee and reported as to the progress of the Buna development in Germany. He said that technical information "*has not been forthcoming as a result of the German Government's refusal, because of military expediency to permit I. G. to reveal such information to anyone outside Germany* * * *" Mr. Howard deplored the fact that the German Government's restrictions on I. G.'s freedom of action had prevented our making material progress in the American field, particularly as there is some indication that the American rubber companies are making independent progress along these lines. As an illustration, he understands Goodyear has already made tentative arrangements with Dow Chemical Company to go ahead in the synthetic rubber field if progress is not made with us. He said he is to have a conference with Goodyear and I. G. representatives here on Wednesday" (appendix 6, exhibit 44).

To briefly summarize, I. G. Farben and Standard had agreed to a joint development of synthetic rubber in this country. They carried on negotiations with various rubber companies in the early thirties with regard to testing the German Buna rubber, which at that time was of an inferior quality. No results came of these negotiations. A plan was proposed for getting du Pont to put its Duprene rubber into a common company with I. G. Farben and Standard and exploit both Duprene and Buna to avoid competition. Nothing came of that plan either. Du Pont continued its manufacture and sale of Duprene, subsequently called neoprene. Hitler forced the development of Buna for tire use in Germany. As a part of his 4-year plan he caused the first large factory to be constructed in 1937 and a second the following year to produce Buna S for tires. He prohibited the exploitation of Buna S or Buna N outside Germany.

STANDARD'S EMPLOYEES DEVELOP BUTYL AND STANDARD MAKES A DEAL WITH GERMANY

Several of Standard's research employees had discovered a process for making synthetic rubber cheaply and easily in the latter part of 1937. The principal raw material, isobutylene, is a cheap, readily available refinery gas. It was apparent at once that, from the standpoint of cost and availability of raw materials and ease of production, it would have a tremendous advantage over Buna or any other known synthetic rubber.

With this knowledge Frank Howard, president of Standard Oil Development, went to Berlin in March 1938 and made a deal with I. G. Farben. This was at the time of the German invasion of Austria (exhibit 45). The deal which Howard made with I. G. Farben was as follows: He agreed to turn over to Germany full information concerning butyl and to furnish samples. In return I. G. Farben agreed that if preliminary tests substantiated Howard's claims as to butyl, I. G. Farben would endeavor to procure Hitler's consent for the exploitation of "rubber-like products" in United States. Standard's files do not contain a written record of the agreement in Berlin, but it is submitted that the above statement is a proper deduction from the following letters.

March 9, 1938, R. P. Russell, vice president of Development, wrote Howard as follows:

"I am attaching Dr. Frolich's letter of March 8th and memorandum by Messrs. Rosen and Thomas of the same date, summarizing the information on isobutylene-butadiene copolymers which has been assembled to date. You appreciate that this memorandum was drawn together hastily and as a result has not been abstracted and summarized as you may wish it, *but certainly it does contain all the essential information.*

"We interpret your cablegram to mean that you wish to present this information to the I. G. so that they may work on it vigorously also. We all of us hope that this can be done without prejudicing Development's position with reference to this particular development. We are all convinced that the development is a really important one and that ultimately it may make considerable money. *We believe it is quite distinct from the I. G. Buna development and is also quite distinct from Vistanex.* We have felt that when the development was presented to Jasco we should be in as good a position with regard to this copolymer as the I. G. is on Buna. In order to make sure that we do obtain such a preferred position, we had hoped that its formal presentation to Jasco could be postponed in order to permit us to make the additional advance in the art that we know will result from further active experimental work. In particular, we all of us are extremely anxious to obtain the higher molecular weight copolymers which, according to the data so far assembled, should have tensile strength and other

Digitized by Google

characteristics fully equal to rubber. The fact that we have not yet reached this status in our own experimental work we hope will not militate against our having a final preferred position in this field.

"Although we have not yet had time to fully analyze the situation, *almost all of us are inclined to favor teaming up with one of the major rubber companies (probably because of technical standing, Goodyear), so that this development may make all possible progress.* The general form of any such cooperative effort we think should be somewhat along the lines of the agreement between Jasco and Procter and Gamble on the fatty acids. In the fatty acid field, for example, we feel that we still would be quite unable to picture the long-term outlet possibilities for the acids if it had not been for our Procter and Gamble cooperative effort. We are not at this time definitely recommending that we do enter an agreement with Goodyear, but since such a general proposal was in our minds *we thought you might wish to discuss the matter with the I. G. at the time you discuss the technical information contained in the attached memorandum* (exhibit 46)."

On March 15, 1938, Howard wrote Russell that while I. G. was making great progress with buna, certain difficulties prevented its exploitation in the United States.

"At my meeting with the I. G. gentlemen in Berlin on the Buna question, it developed that very rapid strides were being made in all phases of the Buna development, and there is even a prospect that this development will very soon stand on its own feet economically in competition with natural rubber under manufacturing conditions and costs in the United States. This is not only in the specialty field of high-priced products, but in the main field of tyre manufacture. Certain difficulties still exist which prevent our I. G. friends from giving us full technical information and proceeding in the normal manner with the commercial development in the United States. It is to be hoped that these difficulties will be surmounted in the near future, and we here desire to do everything possible to bring about that result.

"In view of the very genuine spirit of cooperation which Dr. ter Meer displayed, I am *convinced that it is not only the right thing to do but the best thing from every standpoint to pass on to them full information on the copolymer at this time.* I do not believe we have anything to lose by this which is comparable with the possible benefit to all of our interests" (appendix 7, exhibit 47).

On April 9, 1938, ter Meer of I. G. Farben wrote Howard making the following statements:

"Referring to your letter of March 15th from London, *I wish to thank you very much for your courtesy of sending me the detailed information about the new interpolymers of butadiene and isobutylene made by Standard Development Company. I have forwarded the various reports to our technical gentlemen concerned and they are giving them careful consideration. In accordance with our arrangements in Berlin I have meanwhile taken up negotiations with the competent authorities in order to obtain the necessary freedom of action in U. S. A. with regard to rubber-like products. As anticipated those negotiations have proved to be rather difficult and the respective discussions are expected to take several months before the desired result is obtained.* I will not fail to inform you about the result in due course." (The complete letter is found on appendix 8, exhibit 48.)

It will be noticed that the German restrictions apply to "rubber-like products," meaning butyl as well as buna rubber. What Howard received was a promise from I. G. Farben to "negotiate" with the German Government to obtain "the necessary freedom of action in the United States of America with regard to rubber-like products." Butyl was thus exchanged for a promise to make a plea to the German Government for Buna, a plea that was never granted insofar as permitting a disclosure of the know how of buna was concerned.

STANDARD AND I. G. FARBEN STALL THE RUBBER COMPANIES

The plan in April 1938, after the deal had been made in Berlin the previous month, was to form a large company in which the rubber companies would be allowed to participate with Standard and I. G. Farben in the exploitation of synthetic rubber. The executive committee memoranda for April 4, 1938, contain the following statement:

"As to the method of approaching the rubber industry, Mr. Howard felt less inclined to follow the patent license method than a program of interesting

Digitized by Google

principal U. S. rubber companies with us and I. G. in a manufacturing plant conveniently located near a pipe line, as at Baytown, [Texas] where low cost butane would be readily available" (appendix 6, exhibit 44).

It should be noted that Goodyear had made clear to Standard and I. G. Farben that they could and would proceed independently in the development of synthetic rubber if they were given no participation in the Buna program (exhibit 49). In the Chemnyco files is a cable to Hochschwender of Chemnyco dated March 3, 1938. Translated it reads as follows:

"Refer to your yesterday's cable stop Please cable immediately approximate date of your return to be conveyed as information to Dow and Goodyear stop Feel that we should not tell them what you said in your cable for reason that this if not the same time further explained may create disagreeable disturbance and might induce them to proceed alone or at least make them take an antagonistic attitude.—Duwalt" (exhibit 50).

On April 5, 1938, Howard wrote the Standard executive committee as follows:

"Representatives of the Goodyear Rubber Co. and the Dow Chemical Co. called today to discuss with Jasco their request for an exclusive license under the I. G. processes of producing synthetic rubber. *It had been agreed in advance that we could not accede to this request, but that we should try to hold the good will of these people.* We informed them that, in our opinion, the problem required broader treatment than their proposal would permit" (exhibit 51).

F. H. Bedford, Jr., president of the Atlas Supply Co., the Standard subsidiary engaged in marketing tires and rubber products, wrote to the executive committee on April 8, 1938, to comment on Howard's letter of April 5. He agreed that "*the mutualization of the manufacture of synthetic rubber among the largest rubber companies in the United States would promote the use of this material in the best and quickest manner*" (appendix 9, exhibit 52). He proposed taking in the Big Four and Atlas and suggested that a plan be worked out instead of waiting for Goodyear to propose a plan.

On April 14, 1938, Howard wrote Bedford and stated:

"Concerning your suggestion that we should not await the action of the Goodyear Company, but should be working forward on this matter ourselves, I entirely agree. *The thing that is really holding us up, however, is not the lack of a plan either from Goodyear or ourselves, but the inability of our partners to obtain permission of their government to proceed with the development in the United States.* Until they obtain this permission it is not possible for us to make any commitment at all. Our primary objective in our talk with the Goodyear and Dow people was to convince them of our good faith and our willingness to cooperate with them in order to *avoid having them proceed prematurely with an independent development which would make it impossible to bring them into any general plan later*" (appendix 10, exhibit 53).

In a Chemnyco memorandum of the conference held with Goodyear and Dow in regard to Buna on April 5, 1938, representatives of Goodyear, Dow, Standard, and Chemnyco being present it is stated: "Mr. Howard opened the conference by stating that I. G. and Standard had decided to begin the manufacture of synthetic rubber in the United States" (exhibit 54). Less than a week later and before Howard's letter to Bedford quoted above, Howard wrote James W. Hayes, chairman of the board, Victaulic Co. of America, another rubber manufacturer, on April 11, 1938:

"I acknowledge your letter of March 8th.

"No definite plans have been made as yet for the exploitation of Buna in the United States. The present commercial importations were more or less on an emergency basis to take care of the situation created by the explosion in the du Pont Duprene plant, which prevented them from supplying their customers for some months. When any permanent program for the handling of the Buna development in the United States is taken up, your letter of March 8th will be considered" (exhibit 55).

STANDARD WARNS I. G. FARBEN THAT THE AMERICAN RUBBER COMPANIES CAN'T BE STALLED MUCH LONGER

It will be recalled that Howard had forwarded the butyl information from London to Germany on March 15, 1938, and that ter Meer had acknowledged its receipt on April 9, 1938 (appendix 8, exhibit 48), and promised to start negotiations with the German Government to get permission for some sort of ex-

Digitized by Google

ploitation of "rubber-like products" in the United States of America. To this letter of April 9, Howard sent a reply on April 20, 1938. It reads as follows:

"I acknowledge with thanks your letter of April 9th. *Dr. Hochschwender and myself will do our very best to keep the situation here under control* so that we will have an opportunity of making the most favorable arrangements and of securing for your process the recognition which we all desire for it.

"I wish you early success in your negotiations, and hope especially that, without waiting for final conclusions on all of the questions involved, you may be able to grant us the authority to proceed in a preliminary way with the rather lengthy discussions here which must be had with the various interested rubber companies preparatory to organizing them into a cooperative group.

"*My view is that we cannot safely delay the definite steps looking toward the organization of our business in the United States, with the cooperation of the people here who would be the strongest allies, beyond next fall—and even to obtain this much delay may not be too easy*" (appendix 11, exhibit 56).

On the same day, April 20, 1938, he wrote Bedford as follows:

"I am just in recipt of a letter from Dr. ter Meer, the essential part of which is as follows:

" 'In accordance with our arrangements in Berlin I have meanwhile taken up negotiations with the competent authorities in order to obtain the necessary freedom of action in the U. S. A. with regard to rubber-like products. As anticipated those negotiations have proved to be rather difficult and the respective discussions are expected to take several months before the desired result is obtained. I will not fail to inform you about the result in due course.' "

"To this I have sent the attached reply:

" 'Dr. Hochschwender fully agrees with the ideas I have expressed and I shall continue, through him, to press for permisison to have some informal talks with some of the other rubber people at the earliest moment. *Until we have this permission, however, there is absolutely nothing we can do and we must be especially careful not to make any move whatever, even on a purely informal, personal, or friendly basis, without the consent of our friends.* We know some of the difficulties they have, both from business complications and interrelations with the rubber and chemical trades in the United States, and *from a national standpoint* in Germany, but we do not know the whole situation—and since under the agreement they have full control over the exploitation of this process, the only thing we can do is to continue to press for authority to act, but in the *meantime loyally preserve the restrictions they have put on us*' " (appendix 12, exhibit 57).

On May 3, 1938, Orville Harden and F. H. Bedford, Standard directors, conferred with D. A. Schmitz and W. P. Pickhardt, of Chemnyco, and urged that every effort be put forth to hasten plans for the buna development.

"Particular emphasis was given because of the close tie-ups between Standard Oil Co. of New Jersey and U. S. Rubber, Atlas Tire, Standard Oil Co. of California, Indiana, Ohio, and Kentucky" (exhibit 58).

This cryptic language is found in a cable from the Chemnyco officials to W. H. Duisberg of I. G. Farben at Frankfort reporting the conference. On the next day May 4, 1938, ter Meer cabled Chemnyco:

"Everything must be avoided which may interfere with the current negotiations we are carrying on with the government agencies. There must be absolutely no publicity in regard to the steps we want to take in U. S. A. before our government has given its permission" (exhibit 59).

ESPIONAGE BY CHEMNYCO

A letter from Chemnyco to ter Meer dated June 3, 1938, makes reference to another conference held between Chemnyco and Dow and Goodyear.

"An exclusive license had been previously denied. When Sebrell (Goodyear) asked for a nonexclusive license, he was given to understand that there could be no question of such a nonexclusive license either at this moment. The reason we gave him was that it was not shown that Dow and Goodyear had anything new and important to contribute. * * *

"We thought it expedient to conduct the negotiations in such a way that we would continue to observe and become acquainted with Dow's and Goodyear's experiments" (exhibit 60).

Digitized by Google

STANDARD AND I. G. FARBEN PUT ON AN ACT FOR THE RUBBER COMPANIES

The executive committee memorandum for October 31, 1938, contains the following statements:

"*Synthetic rubber.*—Negotiations indicate that the German Government will now permit discussions of details with, and revelation of technical processes to non-German parties in interest, so that within one or two months considerable progress ought to be made in these negotiations; *although the German interests hope to sell the process to the international rubber cartel that cource would probably mean the process might be buried in the interest of maintaining a market for natural rubber.* From our approach, the possibility of interesting some rubber interest in the United States in a mutualized company for the commercialization of the process would seem the more normal course. Although the base stock used in this synthetic process is normally refinery gas, there is a possibility of a less prolific supply by dehydrogenating the butane in natural gas. To the extent that the patent question has been searched to date, the situation seems clear of any major difficulty.

"Buna N which is the high quality, high-priced specialty rubber produced from this synthetic process, appears to have a ready market and Goodyear has already approached our interests for a license as soon as licenses are available.

"Buna S the lower priced quantity product from the process, which would be used in the rubber tire market, is more difficult to produce at a commercially practicable cost, although recent developments in Germany indicate it may be possible to produce this product at a cost of between 15¢ and 20¢ per pound, as compared with the market for crude rubber which has varied in the past several years between 10¢ and 30¢ per pound" (appendix 13, exhibit 61).

The following letter is from Howard to Farish dated November 18, 1938:

"Dr. ter Meer, of the I. G. Farbenindustrie, will arrive in New York on Thanksgiving Day and will be accompanied by Dr. Muller-Cunradi. Dr. ter Meer must sail from here the 16th of December.

"During their stay they wish to review the entire situation in connection with the establishment of a synthetic rubber industry in the United States, which will involve (1) a study of the available hydrocarbon gases and a comparison of data on processing costs, which will be made by Dr. Muller-Cunradi jointly with our technical people, and (2) a review of the economic and financial aspects of the project. In this last connection, Dr. ter Meer believes it will be desirable to consult with the heads of all the principal rubber companies.

"*The question which should be settled at the outset is whether, in the discussions with outside interests in the United States, it is desirable that Dr. ter Meer should present the matter as an I. G. project, identifying Jersey only as a probable cooperator and supplier of raw materials, or whether it is in the interests of both parties that the matter should be presented from the outset as a project which, if undertaken in America, will be a primarily American project, sponsored by Jersey, but of course based upon the German I. G. technical foundation.*

"Not being able to see clearly just how the matter would proceed practically in the United States, or what would be in the interests of the parties, we have, in the few discussions with outsiders which have been held to date in the United States, *straddled the above issue*, but it would appear that we shall have to give a little more definite indication of our position in the matter if we are to make very much headway during Dr. ter Meer's present visit.

"*My present opinion is that it is probably desirable, without making any definite statements on the subject, to conduct the discussions in the United States in all cases jointly with Dr. ter Meer and under such conditions as to give the definite impression that Jersey is taking a leading part in developing the situation here.*"

The complete letter is found in appendix 14, exhibit 62.

The following statements are taken from Standard Executive Committee memoranda November 28, 1938:

"Mr. F. A. Howard and Drs. Hochschwender and ter Meer of the German I. G. joined the meeting. Dr. ter Meer first reviewed the progress made by the I. G. in expermenting with synthetic rubber * * *. By 1934 the program of self-sufficiency initiated by the new national regime in Germany, together with encouraging progress in experimentation in the synthetic rubber field, resulted

Digitized by Google

characteristics fully equal to rubber. The fact that we have not yet reached this status in our own experimental work we hope will not militate against our having a final preferred position in this field.

"Although we have not yet had time to fully analyze the situation, *almost all of us are inclined to favor teaming up with one of the major rubber companies (probably because of technical standing, Goodyear), so that this development may make all possible progress.* The general form of any such cooperative effort we think should be somewhat along the lines of the agreement between Jasco and Procter and Gamble on the fatty acids. In the fatty acid field, for example, we feel that we still would be quite unable to picture the long-term outlet possibilities for the acids if it had not been for our Procter and Gamble cooperative effort. We are not at this time definitely recommending that we do enter an agreement with Goodyear, but since such a general proposal was in our minds *we thought you might wish to discuss the matter with the I. G. at the time you discuss the technical information contained in the attached memorandum* (exhibit 46)."

On March 15, 1938, Howard wrote Russell that while I. G. was making great progress with buna, certain difficulties prevented its exploitation in the United States.

"At my meeting with the I. G. gentlemen in Berlin on the Buna question, it developed that very rapid strides were being made in all phases of the Buna development, and there is even a prospect that this development will very soon stand on its own feet economically in competition with natural rubber under manufacturing conditions and costs in the United States. This is not only in the specialty field of high-priced products, but in the main field of tyre manufacture. Certain difficulties still exist which prevent our I. G. friends from giving us full technical information and proceeding in the normal manner with the commercial development in the United States. It is to be hoped that these difficulties will be surmounted in the near future, and we here desire to do everything possible to bring about that result.

"In view of the very genuine spirit of cooperation which Dr. ter Meer displayed, I am *convinced that it is not only the right thing to do but the best thing from every standpoint to pass on to them full information on the copolymer at this time.* I do not believe we have anything to lose by this which is comparable with the possible benefit to all of our interests" (appendix 7, exhibit 47).

On April 9, 1938, ter Meer of I. G. Farben wrote Howard making the following statements:

"Referring to your letter of March 15th from London, *I wish to thank you very much for your courtesy of sending me the detailed information about the new interpolymers of butadiene and isobutylene made by Standard Development Company. I have forwarded the various reports to our technical gentlemen concerned and they are giving them careful consideration. In accordance with our arrangements in Berlin I have meanwhile taken up negotiations with the competent authorities in order to obtain the necessary freedom of action in U. S. A. with regard to rubber-like products. As anticipated those negotiations have proved to be rather difficult and the respective discussions are expected to take several months before the desired result is obtained.* I will not fail to inform you about the result in due course." (The complete letter is found on appendix 8, exhibit 48.)

It will be noticed that the German restrictions apply to "rubber-like products," meaning butyl as well as buna rubber. What Howard received was a promise from I. G. Farben to "negotiate" with the German Government to obtain "the necessary freedom of action in the United States of America with regard to rubber-like products." Butyl was thus exchanged for a promise to make a plea to the German Government for Buna, a plea that was never granted insofar as permitting a disclosure of the know how of buna was concerned.

STANDARD AND I. G. FARBEN STALL THE RUBBER COMPANIES

The plan in April 1938, after the deal had been made in Berlin the previous month, was to form a large company in which the rubber companies would be allowed to participate with Standard and I. G. Farben in the exploitation of synthetic rubber. The executive committee memoranda for April 4, 1938, contain the following statement:

"As to the method of approaching the rubber industry, Mr. Howard felt less inclined to follow the patent license method than a program of interesting

Digitized by Google

principal U. S. rubber companies with us and I. G. in a manufacturing plant conveniently located near a pipe line, as at Baytown, [Texas] where low cost butane would be readily available" (appendix 6, exhibit 44).

It should be noted that Goodyear had made clear to Standard and I. G. Farben that they could and would proceed independently in the development of synthetic rubber if they were given no participation in the Buna program (exhibit 49). In the Chemnyco files is a cable to Hochschwender of Chemnyco dated March 3, 1938. Translated it reads as follows:

"Refer to your yesterday's cable stop Please cable immediately approximate date of your return to be conveyed as information to Dow and Goodyear stop Feel that we should not tell them what you said in your cable for reason that this if not the same time further explained may create disagreeable disturbance and might induce them to proceed alone or at least make them take an antagonistic attitude.—Duwalt" (exhibit 50).

On April 5, 1938, Howard wrote the Standard executive committee as follows:

"Representatives of the Goodyear Rubber Co. and the Dow Chemical Co. called today to discuss with Jasco their request for an exclusive license under the I. G. processes of producing synthetic rubber. *It had been agreed in advance that we could not accede to this request, but that we should try to hold the good will of these people.* We informed them that, in our opinion, the problem required broader treatment than their proposal would permit" (exhibit 51).

F. H. Bedford, Jr., president of the Atlas Supply Co., the Standard subsidiary engaged in marketing tires and rubber products, wrote to the executive committee on April 8, 1938, to comment on Howard's letter of April 5. He agreed that "*the mutualization of the manufacture of synthetic rubber among the largest rubber companies in the United States would promote the use of this material in the best and quickest manner*" (appendix 9, exhibit 52). He proposed taking in the Big Four and Atlas and suggested that a plan be worked out instead of waiting for Goodyear to propose a plan.

On April 14, 1938, Howard wrote Bedford and stated:

"Concerning your suggestion that we should not await the action of the Goodyear Company, but should be working forward on this matter ourselves, I entirely agree. *The thing that is really holding us up, however, is not the lack of a plan either from Goodyear or ourselves, but the inability of our partners to obtain permission of their government to proceed with the development in the United States.* Until they obtain this permission it is not possible for us to make any commitment at all. Our primary objective in our talk with the Goodyear and Dow people was to convince them of our good faith and our willingness to cooperate with them in order to *avoid having them proceed prematurely with an independent development which would make it impossible to bring them into any general plan later*" (appendix 10, exhibit 53).

In a Chemnyco memorandum of the conference held with Goodyear and Dow in regard to Buna on April 5, 1938, representatives of Goodyear, Dow, Standard, and Chemnyco being present it is stated: "Mr. Howard opened the conference by stating that I. G. and Standard had decided to begin the manufacture of synthetic rubber in the United States" (exhibit 54). Less than a week later and before Howard's letter to Bedford quoted above, Howard wrote James W. Hayes, chairman of the board, Victaulic Co. of America, another rubber manufacturer, on April 11, 1938:

"I acknowledge your letter of March 8th.

"No definite plans have been made as yet for the exploitation of Buna in the United States. The present commercial importations were more or less on an emergency basis to take care of the situation created by the explosion in the du Pont Duprene plant, which prevented them from supplying their customers for some months. When any permanent program for the handling of the Buna development in the United States is taken up, your letter of March 8th will be considered" (exhibit 55).

STANDARD WARNS I. G. FARBEN THAT THE AMERICAN RUBBER COMPANIES CAN'T BE STALLED MUCH LONGER

It will be recalled that Howard had forwarded the butyl information from London to Germany on March 15, 1938, and that ter Meer had acknowledged its receipt on April 9, 1938 (appendix 8, exhibit 48), and promised to start negotiations with the German Government to get permission for some sort of ex-

Digitized by Google

ploitation of "rubber-like products" in the United States of America. To this letter of April 9, Howard sent a reply on April 20, 1938. It reads as follows:

"I acknowledge with thanks your letter of April 9th. *Dr. Hochschwender and myself will do our very best to keep the situation here under control* so that we will have an opportunity of making the most favorable arrangements and of securing for your process the recognition which we all desire for it.

"I wish you early success in your negotiations, and hope especially that, without waiting for final conclusions on all of the questions involved, you may be able to grant us the authority to proceed in a preliminary way with the rather lengthy discussions here which must be had with the various interested rubber companies preparatory to organizing them into a cooperative group.

"*My view is that we cannot safely delay the definite steps looking toward the organization of our business in the United States, with the cooperation of the people here who would be the strongest allies, beyond next fall—and even to obtain this much delay may not be too easy*" (appendix 11, exhibit 56).

On the same day, April 20, 1938, he wrote Bedford as follows:

"I am just in recipt of a letter from Dr. ter Meer, the essential part of which is as follows:

" 'In accordance with our arrangements in Berlin I have meanwhile taken up negotiations with the competent authorities in order to obtain the necessary freedom of action in the U. S. A. with regard to rubber-like products. As anticipated those negotiations have proved to be rather difficult and the respective discussions are expected to take several months before the desired result is obtained. I will not fail to inform you about the result in due course.' "

"To this I have sent the attached reply:

" 'Dr. Hochschwender fully agrees with the ideas I have expressed and I shall continue, through him, to press for permisison to have some informal talks with some of the other rubber people at the earliest moment. *Until we have this permission, however, there is absolutely nothing we can do and we must be especially careful not to make any move whatever, even on a purely informal, personal, or friendly basis, without the consent of our friends.* We know some of the difficulties they have, both from business complications and interrelations with the rubber and chemical trades in the United States, and *from a national standpoint* in Germany, but we do not know the whole situation—and since under the agreement they have full control over the exploitation of this process, the only thing we can do is to continue to press for authority to act, but in the *meantime loyally preserve the restrictions they have put on us*' " (appendix 12, exhibit 57).

On May 3, 1938, Orville Harden and F. H. Bedford, Standard directors, conferred with D. A. Schmitz and W. P. Pickhardt, of Chemnyco, and urged that every effort be put forth to hasten plans for the buna development.

"Particular emphasis was given because of the close tie-ups between Standard Oil Co. of New Jersey and U. S. Rubber, Atlas Tire, Standard Oil Co. of California, Indiana, Ohio, and Kentucky" (exhibit 58).

This cryptic language is found in a cable from the Chemnyco officials to W. H. Duisberg of I. G. Farben at Frankfort reporting the conference. On the next day May 4, 1938, ter Meer cabled Chemnyco:

"Everything must be avoided which may interfere with the current negotiations we are carrying on with the government agencies. There must be absolutely no publicity in regard to the steps we want to take in U. S. A. before our government has given its permission" (exhibit 59).

ESPIONAGE BY CHEMNYCO

A letter from Chemnyco to ter Meer dated June 3, 1938, makes reference to another conference held between Chemnyco and Dow and Goodyear.

"An exclusive license had been previously denied. When Sebrell (Goodyear) asked for a nonexclusive license, he was given to understand that there could be no question of such a nonexclusive license either at this moment. The reason we gave him was that it was not shown that Dow and Goodyear had anything new and important to contribute. * * *

"We thought it expedient to conduct the negotiations in such a way that we would continue to observe and become acquainted with Dow's and Goodyear's experiments" (exhibit 60).

Digitized by Google

STANDARD AND I. G. FARBEN PUT ON AN ACT FOR THE RUBBER COMPANIES

The executive committee memorandum for October 31, 1938, contains the following statements:

"*Synthetic rubber.*—Negotiations indicate that the German Government will now permit discussions of details with, and revelation of technical processes to non-German parties in interest, so that within one or two months considerable progress ought to be made in these negotiations; *although the German interests hope to sell the process to the international rubber cartel that cource would probably mean the process might be buried in the interest of maintaining a market for natural rubber.* From our approach, the possibility of interesting some rubber interest in the United States in a mutualized company for the commercialization of the process would seem the more normal course. Although the base stock used in this synthetic process is normally refinery gas, there is a possibility of a less prolific supply by dehydrogenating the butane in natural gas. To the extent that the patent question has been searched to date, the situation seems clear of any major difficulty.

"Buna N which is the high quality, high-priced specialty rubber produced from this synthetic process, appears to have a ready market and Goodyear has already approached our interests for a license as soon as licenses are available.

"Buna S the lower priced quantity product from the process, which would be used in the rubber tire market, is more difficult to produce at a commercially practicable cost, although recent developments in Germany indicate it may be possible to produce this product at a cost of between 15¢ and 20¢ per pound, as compared with the market for crude rubber which has varied in the past several years between 10¢ and 30¢ per pound" (appendix 13, exhibit 61).

The following letter is from Howard to Farish dated November 18, 1938:

"Dr. ter Meer, of the I. G. Farbenindustrie, will arrive in New York on Thanksgiving Day and will be accompanied by Dr. Muller-Cunradi. Dr. ter Meer must sail from here the 16th of December.

"During their stay they wish to review the entire situation in connection with the establishment of a synthetic rubber industry in the United States, which will involve (1) a study of the available hydrocarbon gases and a comparison of data on processing costs, which will be made by Dr. Muller-Cunradi jointly with our technical people, and (2) a review of the economic and financial aspects of the project. In this last connection, Dr. ter Meer believes it will be desirable to consult with the heads of all the principal rubber companies.

"*The question which should be settled at the outset is whether, in the discussions with outside interests in the United States, it is desirable that Dr. ter Meer should present the matter as an I. G. project, identifying Jersey only as a probable cooperator and supplier of raw materials, or whether it is in the interests of both parties that the matter should be presented from the outset as a project which, if undertaken in America, will be a primarily American project, sponsored by Jersey, but of course based upon the German I. G. technical foundation.*

"Not being able to see clearly just how the matter would proceed practically in the United States, or what would be in the interests of the parties, we have, in the few discussions with outsiders which have been held to date in the United States, *straddled the above issue*, but it would appear that we shall have to give a little more definite indication of our position in the matter if we are to make very much headway during Dr. ter Meer's present visit.

"*My present opinion is that it is probably desirable, without making any definite statements on the subject, to conduct the discussions in the United States in all cases jointly with Dr. ter Meer and under such conditions as to give the definite impression that Jersey is taking a leading part in developing the situation here.*"

The complete letter is found in appendix 14, exhibit 62.

The following statements are taken from Standard Executive Committee memoranda November 28, 1938:

"Mr. F. A. Howard and Drs. Hochschwender and ter Meer of the German I. G. joined the meeting. Dr. ter Meer first reviewed the progress made by the I. G. in expermenting with synthetic rubber * * *. By 1934 the program of self-sufficiency initiated by the new national regime in Germany, together with encouraging progress in experimentation in the synthetic rubber field, resulted

Digitized by Google

in a plan to construct a 24,000/30,000-ton commercial scale plant to be completed by 1936. Such plant was in full operation in the latter part of 1937 and 1938 and a second factory of similar size will be started in May of 1939 to be completed in 1940.

"Of total German rubber consumption of between 95,000 and 100,000 tons per annum, the first syntheic rubber factory is producing about one-fourth of those requirements and by 1941, with two plants operating at capacity, it is estimated that 70% of German consumption will be taken care of * * *.

*"The German Government now having permitted the I. G. to make complete disclosure outside Germany of the "know-how" on the process [never done] and to attempt commercial exploitation, particularly in the United States, the first question for the Committee to consider is whether they would suggest he contact the four leading American tire companies in I. G.'s behalf or on behalf of Jersey as sponsor for the process in the United States. The Committee felt that he should contact the tire companies on Jersey's behalf as sponsor for the process, it being intimated to the tire companies that negotiations between I. G. and the Jersey Company have not yet been crystallized, but that they are in process of development * * *"* (*appendix 15, exhibit 63*).

Buna Cost Comparable to Natural Rubber, Butyl Much Cheaper

The following is an extract from the Standard Executive Committee Memoranda, November 29, 1938:

"The 18½¢ per pound cost of making Buna S," referred to by Dr. ter Meer yesterday, is predicated on such supplies of butane as are referred to above at a cost of around 1.8¢ per gallon f. o. b. Baytown, which the Development people feel is a fair cost to place on this material. If, however, the Executive Committee will consider favorably within the next few months the Sales Department's recommendation that facilities be provided for making a 'heavy ESSO' of superior octane and other road characteristics through the high-temperature low-pressure crack of gas oil, it should be borne in mind that such a process would produce a considerable amount of butadiene and other chemicals, as by-products, at so reasonable a cost that if the raw material from Buna 'S' were derived therefrom *its production cost would be reduced from 18½¢ figure referred to by Dr. ter Meer to around 13¢ or 13½¢.*

"Mr. Murphree then explained the Development Company's own copolymer process for the production of synthetic rubber. Present estimates indicate that a fifty-ton per day plant for the production of synthetic rubber from this process would cost about $3,000,000 and produce the synthetic rubber at a manufacturing cost of *around 12¢ as compared with the 18½¢ cost of the Buna 'S' method*" (Appendix 16, exhibit 64).

Ter Meer made his tour of the rubber companies conferring with United States Rubber on December 7, 1938; Firestone, December 9; Goodyear, December 12; Goodrich, December 14; and General, December 15 (exhibit 65). To keep the rubber companies interested, the next step was taken in the spring of 1939, when a representative from the I. G. Farben rubber works made another tour of the rubber companies. Samples of Buna S made in Germany were distributed among the five rubber companies, Standard and du Pont. Arrangements were made for tire tests on the part of the rubber companies, and results were expected by August of 1939. This is discussed in a memorandum of H. Beller of Chemnyco, dated May 4, 1939 (exhibit 66). Apparently the tire tests were not completed prior to September 1, 1939; at any rate no action had been taken by I. G. Farben and Standard in connection with tests made by these rubber companies.

Germany Goes to War, Rubber Companies Demand Action and Howard Goes to Holland

The war commenced on September 1, 1939. On September 15, 1939, Sebrell, of Goodyear, had a conference with Hochschwender of Chemnyco, in New York.

"Sebrell expressed the opinion that, in view of the present situation, [the war] developments in the synthetic rubber field were progressing very rapidly and that *further stalling* on the part of I. G. might prove detrimental to I. G.'s interests" (appendix 17, exhibit 67).

On September 19, 1939, Semon of Goodrich, had a conference with Chemnyco. In the course of this conference, Semon stated that Goodrich was determined not to give up the market which they had created for Perbunan. If, in view of

Digitized by Google

the new situation [apparently reference to the outbreak of the war] Perbunan would be no longer available in United States of America, he stated that Goodrich would be compelled to take the initiative and produce Perbunan or equal products itself" (appendix 18, exhibit 68).

On September 25, Howard met I. G. Farben officials in The Hague and entered into an agreement known as The Hague Memorandum (appendix 19, exhibit 69). The purpose of this agreement was to rearrange the ostensible ownership of I. G. Farben in the processes exploited by Jasco. To avoid seizure by the Alien Property Custodians of the German interests it was provided that I. G. Farben's 50 percent stock interest should be assigned to Development. As Howard wrote to Minton on October 16, 1939:

"The substance of the main proposal for readjustment of the Jasco arrangement is that in place of having the I. G. and Jersey jointly interested in these processes throughout the world outside of Germany, Jasco become 100% Jersey and takes over 100% interest in the processes for the U. S. and the French and Briitsh empires, while the I. G. takes over 100% interest in the same processes for the rest of the world. I believe this arrangement, when coupled with the provision for future readjustments, is entirely equitable, and that without regard to the possibility of legally enforcing the readjustment provision, it should be satisfactory in substance to us, as it is to the I. G. An attempt to put this provision in a form which would be fully legally enforceable might result in many difficulties, and (speaking for myself and the I. G. negotiators) it was not our intention to provide for any legally enforceable clause of this character in our arrangements.

* * * * * * *

"In addition to the above direct guarantees for the return of the pounds advanced, the arrangement seems to be the only safe and certain method of putting into operation the settlement of the Jasco affairs and being as certain as possible that this rearrangement will leave us in full control of the situation *without interference of any government as regards the processes in question for the U. S., the British Empire, and the French empire*" (appendix 20, exhibit 70).

Thus, Standard was given apparent full control over the three Jasco processes and the buna process (which was then for the first time recognized as being in Jasco) in the United States and the British and French Empires. As Russell wrote in a memorandum for Farish on May 9, 1940:

"Although general cooperation between Jersey and I. G. in regard to Buna had gone on for several years, it was decided not to bring the Buna process officially into Jasco and contractual settlement of the matter was postponed for political reasons. The official bringing of the Buna rights into Jasco resulted from the so-called Hague Memorandum, which was finally made effective as of September 1, 1939" (appendix 21, exhibit 71).

I. G. Farben was given full control for the rest of the world. It was further provided that if this redistribution of royalty rights from Jasco processes should prove to be inequitable in comparison with the original basis for distribution, any inequities would be corrected at a later time. This is found in section IV of the Hague memorandum:

* * * * * * *

"On request of either party (S. O. Dev. Co. or I. G.) made at any time after one year, and not more frequently than once each year thereafter, from the date hereof, the parties shall exchange reports of their respective returns from the promotion of the said processes, and if it shall appear from such reports that the division of territory of exclusive ownership between the parties as herein effected have not been equitable in its financial results as judged by the agreement of September 30, 1930, then the parties shall correct the inequity in such manner as may seem most fair and advantageous at the time" (appendix 19, exhibit 69)[1].

* * * * * * *

To protect I. G.'s continuing interest, its 50 percent stock interest was assigned to Trustees instead of to Development (appendix 22, exhibit 72).

In a letter of October 12, 1939, Howard wrote:

"Pursuant to these arrangements I was able to keep my appointments in Holland, where I had three days of discussion with the representatives of the I. G. They delivered to me assignments of some 2,000 foreign patents, and we did our best to work out complete plans for a *modus vivendi* which would operate through the term of the war, whether or not the United States came in" (appendix 23, exhibit 73).

Digitized by Google

THE MUNITIONS BOARD, STANDARD, AND THE RUBBER COMPANIES

Standard's further dealings with the rubber companies can be better understood if one has a grasp of Standard's relations with the Army and Navy Munitions Board. As revealed in the Standard documents, this Board was charged with the duty of making adequate preparation for just such an exigency as has arisen, i. e., the total loss of our natural-rubber supply. In January 1939 Standard representatives met with the Munitions Board and discussed the synthetic-rubber situation (appendix 24, exhibit 74). Small samples of Buna S, Buna N, and butyl rubber were given to be tested for use by the Chemical Warfare Service and by the Navy (appendix 25, exhibit 75).

On October 19, 1939, Howard Hopkins, and Frolich, director of the chemical division of Esso Laboratories, met with the Munitions Board at the latter's request (appendix 26, exhibit 76). In a letter to A. C. Minton, Standard secretary, dated October 25, 1939, Howard states that the Munitions Board was concerned about the natural rubber supply.

"In view of this situation the Munitions Board desires to know as accurately as possible what the situation is with regard to the possibility of producing rubber synthetically within the United States" (appendix 27, exhibit 77).

The Standard representatives undertook to coordinate the results of the tests of Buna S and to get a rough estimate of capital and operating costs for a 25,000-ton Buna S plant.

On October 31, 1939, Standard procured from I. G. Farben's New York representative (H. Beller of Chemnyco) a nine-page "memorandum re manufacture of Buna S and Perbunan in United States of America." The first page contains the following statement:

"(*A*) *Licensing and Manufacturing Arrangements*

"During the last two years I. G. have been approached repeatedly by several American companies concerning manufacturing arrangements or the granting of a license for the manufacture, use, and sale in the United States of products of the Buna type, especially Perbunan. Two of these inquiries have been made by well-known rubber companies, which have had already long and detailed experience with Perbunan.

"*Goodrich and Goodyear.*—The two rubber companies in question, Goodrich and Goodyear, have done appreciable research work of their own in the field of polymerization and have probably gained enough knowledge to handle the production of Buna type products. From a technical standpoint both rubber companies seem to be well qualified for the granting of a license under the I. G. patents. However, the Goodrich Company may deserve preferential consideration in this respect due to their outstanding development work and widespread technical use of Perbunan for mechanical articles. Both rubber companies have available sources of supply for Butadiene as well as Styrene and Acrylicnitril" (exhibit 78).

STANDARD FEELS OUT THE RUBBER COMPANIES

On November 6, 1939, Howard sent letters to all the major rubber companies almost identical with the following which went to J. W. Thomas, president of Firestone:

"Some time ago you were supplied with samples of the Buna synthetic rubbers. Since then you have continued to show an active interest in this development. *I have now to inform you that the I. G. Farbenindustrie has withdrawn completely from participation in this Buna development in the United States.*

"Dr. M. B. Hopkins, of our company, has been designated to follow the Buna developments for us. I would appreciate your letting me know if he may call upon you to discuss them with you or your associates.

"We do not desire to make any public statements on this matter at present and would appreciate it if you would also refrain from public comment for the time being" (exhibit 79).

The statement made in each of these letters that "I. G. Farbenindustrie has withdrawn completely from participation in this buna development in the United States" was false and misleading. As has been shown, I. G. Farben retained, as a result of the Hague Memorandum, the right to participate in buna royalties to the extent necessary to make an equitable diversion between the two companies. The extent to which I. G. Farben was still actively participating in the buna development, as demonstrated by its strict control of the license agree-

Digitized by Google

ment provisions, will be seen by an examination of this sheaf of cables beginning October 16, 1939, and ending July 31, 1940. In this last cable Howard thanks ter Meer for having finally sent the patent assignments (exhibit 80).

On November 6, 1939, Murphree gave Howard a statement indicating that the estimated total cost of Buna S, including depreciation, was 18.5 cents per pound (appendix 27, exhibit 81).

On the same day, November 6, 1939, Howard prepared a memorandum, presumably for the executive committee, on the situations with relation to buna and butyl. It contains the following statements:

"The company which is taking the largest quantities, the Goodrich Rubber Co., has applied for a license to manufacture the product. They have definitely stated that they do not need any technique from Germany, but require only a bare patent license—and that if refused a license, they are going to proceed anyway with the alternative processes which they think will be noninfringing.

"A year ago the Goodyear and Dow companies made an application to the I. G. and ourselves for an exclusive license for Buna N (the high-priced specialty rubber) for the United States. No final answer was given, but it seemed quite apparent that they could not obtain the exclusive license they wanted. What they have done since we have not yet been able to find out. The U. S. Rubber Co. have consistently displayed an active interest in Buna N.

"The tests of the Buna S (the tire rubber) have been under way in the U. S. throughout the summer by Goodyear, Goodrich, Firestone, and U. S. Rubber. None of the companies has been able to substantiate completely the I. G. claim of a 30% increase in mileage, but apparently all of them (save Goodyear) have obtained some definite increase in mileage, and they all recognize the product as superior to present tread rubber in wearing qualities. They also seem confident that with more experience in the handling and compounding of the product with American materials they can improve present results. The Goodrich Company has made a definite statement that they would expect themselves to provide an outlet for approximately 100 to 200 tons per day of the Buna S, if it could be supplied to them at a price of 25¢.

"We have assumed to the I. G. the obligation to discuss with the du Pont Company the entire situation before deciding on our policy here, and these discussions will take place very soon.

"Our own butyl rubber development is being pushed aggressively in our own laboratories, but without outside cooperation up to this time. The only outside contact we have had on butyl rubber has been with the Munitions Board, through whom we have had contact with the technicians of the Army and Navy concerning possible special uses of butyl rubber in munitions. There is a considerable temptation to publicize this butyl rubber development and to seek contact with the rubber companies on it immediately, but a sounder policy apparently is to confine the development to our own organization up to the point of standardized operation of our pilot plant about next January or February. This will *give us an opportunity to feel out the whole synthet c rubber situation in the United States with the du Pont company and with the four leading American rubber manufacturers through our contacts with them on the Buna matter.* The additional time is also desirable from a patent standpoint" (appendix 28, exhibit 82).

On November 9, 1939, Fisher and Hopkins met with Hochswender, Mueller, and Beller of I. G. Farben's New York representative, Chemnyco. In the memorandum of this discussion, dated November 9, the following is the last paragraph:

"Robinson [Robertson] of Goodrich asked regarding the cost of Buna S. He said the I. G. had indicated a price of 30¢ per pound but at this figure they would not be interested. At 25¢ per lb. they would be interested and would participate technically and financially in a production of 100–200 tons per day. He thought 100 tons or 5% of total U. S. consumption could be used without effect on rubber" (appendix 29, exhibit 83).

On November 10, 1939, Hopkins went to the Goodrich offices in Akron and conferred with their officials. These facts were known to him: (a) that Buna S could be produced and sold for 25 cents a pound at a substantial profit. He had just received two days previously cost figures of 18.5 cents including depreciation, (b) that Goodrich would be interested at a price of 25 cents per pound and would participate technically and financially in a production of 100–200 tons per day. He had so stated in a memorandum written the preceding day.

Digitized by Google

He had a conference with five representatives of Goodrich. Two versions of the conference are attached (appendix 30, exhibit 84), one a letter from Hopkins to Howard dated November 13, 1939, and the other a memorandum dated November 14, 1939, of W. F. Avery, Assistant Secretary (also attorney) of Goodrich, who attended the meeting (appendix 31, exhibit 85). There are no apparent conflicts in the two versions and therefore it is a reasonable assumption that each writer was giving his best recollection of what was said. Some of the statements in the Goodrich version which are not found in the Standard letter are quotations of Hopkins to the effect that Buna S will have to be subsidized by the Government, but that Buna N could be made commercially. Further:

"*Dr. Hopkins said that a chemical company was now making acrylic nitrile under license from I. G. which, however, would not permit them to make this material for synthetic rubbers* and that this chemical company wants the right to make it for Buna rubbers and also has asked for a license to make Buna products. * * * Dr. Hopkins stated that S. O. D. [Standard Oil Development] desired to control Buna S because the raw materials for making it come from petroleum" (appendix 30, exhibit 84).

Some of the statements in Hopkins' letter not exactly duplicated in Avery's memo are the following:

"Goodrich is definitely interested in Perbunan and asked for a license to go into manufacture immediately. The license need not be exclusive.

"With regard to Buna S, Goodrich finds it as good as or a little better than natural rubber. *At a competitive price, they would be quite willing to use it to replace natural rubber.* They consider that production of at least 100 tons per day in the United States would be necessary to make it practical commercially from the standpoint of rubber companies taking hold.

"*The most important point made by Goodrich in favor of independent production by the different rubber companies is that the immediate supply problem could be best met if it were not necessary to take the time to get all the companies working together*" (appendix 31, exhibit 85).

Letters reporting on conferences held with other rubber company representatives at about the same time are attached. Appendix 32, exhibit 86, is a letter dated November 13, 1939, from Hopkins to Howard concerning the Firestone conference. Appendix 33, exhibit 87, is a similar letter dated November 15, 1939, concerning United States Rubber. Appendix 34, exhibit 88, is a similar letter dated November 22, 1939, concerning General Tire & Rubber Co. and appendix 35, exhibit 89, concerning a conference held with Goodyear representatives.

In the report concerning Firestone, Hopkins states:

"Firestone is interested in any synthetic rubber development, but it was quickly apparent that immediate interest in Bunas is not as keen as that of Goodyear and Goodrich. This is possibly for the reason that Firestone has done no work to manufacture synthetic rubber such as has been done by the others."

Compare also the statement from the letter concerning United States Rubber.

"U. S. Rubber has not done as much with synthetic rubbers as Goodyear and Goodrich. Without waiting for the results of the tire tests they feel fairly certain that Buna-S would be a very good substitute for rubber if it could be produced at a satisfactory price. * * * He [Roberts, Vice Pres.] said that if his company had the Buna patents they would not hesitate to move fast in getting a plant going. If, therefore, Jersey was considering licensing a rubber company, U. S. Rubber Company would be very much interested in taking a license. *They would, however, want the license to be exclusive.*"

The foregoing are the reports of the conferences which Hopkins held with Chemnyco officials November 9, with Goodrich and Firestone November 10, and with United States Rubber, November 14.

STANDARD MISLEADS THE MUNITIONS BOARD

On November 15, 1939, Howard and Hopkins conferred with officers of the Munitions Board (appendix 36, exhibit 90). Appendix 37, exhibit 91, is Howard's memorandum of that meeting. Appendix 38, exhibit 92, is Maj. James C. Browne's report of the same session. Knowing the facts as to costs, which were known only to the Standard officials, and knowing what the rubber company representatives had said, as disclosed in the various reports, positive misstatements must have been made to Major Browne and the other officers to create the impression

Digitized by Google

which resulted in the report of November 16, 1939. For example, Browne's report quotes the Standard officials:

"(3) No company wants to pioneer the development of Buna S on such a large scale that would be necessary to make the United States self-sufficient in respect to rubber—peacetime competition with natural rubber prevents and the resultant financial burden is too much" (appendix 38, exhibit 92).

The fact which Major Browne should have been given is that no rubber company had been given an opportunity to participate in the pioneering of the development of Buna S on any scale. In the middle of page 2, Major Browne states:

"It was indicated that these companies would probably be pleased to acquire the license from Buna N but *would react unfavorably to the proviso requiring the development of Buna S.* A Government subsidy, guarantee, or some sort of outlet for tires fabricated from Buna S would help carry the burden and ameliorate this restrictive contractual clause."

Such a distortion of the attitude of the rubber companies toward developing Buna S was so unjustified that Howard himself suggested in his memorandum of November 22, 1939, to the Munitions Board that "it is hardly fair to say that the rubber companies would 'react unfavorably' to the development of Buna S for tire purposes" (appendix 39, exhibit 93). The fact remains that such was the impression created by Hopkins and himself as reflected in Major Browne's report. Major Browne sent copies of Howard's corrections to the various officers (appendix 40, exhibit 94).

HOWARD ORIGINATES THE TRICKY LICENSE AGREEMENT

In his memorandum of November 17, 1939, Howard said:

"It would probably not be lawful to license the Buna rubber on condition that the butadiene supplies be purchased from us. It might be possible for us to license on condition that each licensee cross-license us under his own improvements, but not require the licensee to pass such a cross-license through us to other licensees. If this proved possible, the effect would be that we should have the right (and would be the only company to have a right) to operate under all of the Buna-N basic and improved patents of all manufacturers. This might possibly be of value to us but we could only capitalize it by actually engaging in the business ourselves. If we want to do this it would be better to do it at the outset" (appendix 37).

Such a license agreement was drawn and was tendered to the major rubber companies. (See appendix 41, exhibits 95 and 96.) In addition to this objectionable cross-licensing feature, it fixed a very high royalty rate of 7½ cents per pound and prohibited manufacture for sale as distinguished from manufacture for use. M. B. Hopkins in a memorandum dated February 1, 1940, described the license as follows:

"The most important terms of the licensing arrangement are:

1. The rubber company takes a license to produce for consumption in its own products but not for sale otherwise. It gives us an option to buy one-fourth of its plant capacity for distribution to the trade generally.
2. A high royalty rate (7.5¢ per lb.) is fixed so as to make the operation practical for the rubber company only so long as the product is used as a relatively high-cost specialty.
3. The rubber company agrees to license back to us its improvements.

"The effect of these terms is to limit rather drastically what the rubber companies may do under their license and to leave Jersey free to itself manufacture and sell, or participate along with rubber companies in a manufacturing organization, or confine its activities to licensing and supplying raw materials. Therefore, the licenses offered may be considered as a stopgap arrangement to permit the rubber companies to get into quick production of Perbunan for specialty use if they so desire. Beyond this, there has been no decision as to how the development will be advanced" (appendix 42, exhibit 97).

W. E. Currie, Standard patent attorney, in a pencilled memorandum characterized the license agreement as follows:

"The agreement as it is now drafted will lead to the centering of all patent rights of Licensees in the hands of Licensor, with no outflow of those rights except to customers of Licensor (and in two minor phases of patents, to Licensor's licensees).

Digitized by Google

"All manufacturing patent rights of Licensees will help to build up Licensor's dominating position, but no Licensee will get the benefit of any other Licensee's manufacturing patent rights. In other words, this is not a cross-licensing agreement, but one in which patents are piled on patents in the hands of one centralizing company" (exhibit 98).

F. A. Howard in a memorandum of January 2, 1940, described the license situation as follows:

"To meet the pressure for Perbunan in the United States, we agreed to offer licenses to the four largest rubber companies under the I. G. synthetic rubber processes but only under conditions which would still leave open to us the possibility of entering the business actively in some way ourselves. The main limitations were a rather high royalty rate, seven and one-half cents per pound, the limitation on production to the licensee's own requirements, and rather far-reaching cross-licensing provisions.

"Of the four companies to whom these proposals have been made, only Goodrich and Goodyear have been active in following them up. Discussions with these companies indicate that to the extent we meet their wishes for the liberalization of the licensing contracts we shall cut away the foundations upon which our own plans would have to rest. While we have told them that in general it is our hope to work out some joint project ultimately, we have assumed no commitment to do so and therefore at the present time they are looking at the license contract we are offering to them as though it were the only thing they would ever receive from us. One cannot blame them for being critical of many of its provisions under these conditions" (appendix 43, exhibit 99).

When the license, with its objectionable features, was submitted to Goodyear its manager, L. B. Sebrell, wrote M. B. Hopkins on December 7, 1939, pointing out the provisions which Goodyear could not accept (exhibit 100). In general, these were the restrictive provisions referred to by the Standard officials above. Standard refused to change the terms of the license and negotiations between the parties stopped in February 1940. (See executive committee memorandum of February 9, 1940, appendix 44, exhibit 101.)

Goodrich had likewise objected to the provisions of the license (1) which piled up improvements in Standard Development, the licensor, and (2) which prohibited manufacture for sale to others than Standard. The executive committee memoranda of January 25, 1940, show that "Mr. Howard said that he did not favor surrendering on these two points, and committee expressed their accord with that view" (appendix 45, exhibit 102).

Thus Goodyear and Goodrich, who had done more experimental work in the field of synthetic rubber than the other two major rubber companies, were left out of the picture. Hopkins in his letters to Howard had pointed out that neither Firestone nor United States Rubber had either the interest or the experience in synthetic rubber of Goodyear and Goodrich.

Firestone agreed to take the license offered, except for minor changes, in March 1940. In notifying the executive committee of this in his letter to A. C. Minton March 7, 1940, Howard suggested using the Firestone agreement to force immediate acceptance of their license by the other companies.

"I believe we are far enough advanced with our butyl rubber development so that we could now bring this into the discussions, *although our natural course would be to hold off some time longer on any disclosure of butyl rubber*" (appendix 46, exhibit 103).

This was exactly 2 years after the full disclosure of butyl rubber to the Germans.

Standard knew that its own butyl process made it possible to produce synthetic rubber more cheaply than could be done by any other process. The plan was to force the reluctant rubber companies to accept the objectionable license on buna by using the threat implicit in the disclosure of the butyl process. The first public announcement of butyl was made at the stockholders' meeting June 4, 1940 (appendix 47, exhibit 104). The final sentences in Farish's announcement were:

"As in the case of Buna rubber, the commercial development of the Butyl rubber will be in stages, the first stage being the manufacture of relatively small quantities for the specialty market and for commercial testing in tire production. Should it become necessary for the United States to produce synthetic rubber in substitution for a major portion of imported natural rubber, we are in a position to manufacture the Butyl Rubber from petroleum in any required quantities as rapidly as the necessary plant facilities can be installed."

Digitized by Google

United States Rubber was the only company, other than Firestone, to accept the license as drawn. This was done on June 18, 1940 (appendix 48, exhibit 105).

The action which resulted in the licensing of Firestone and United States Rubber, and the exclusion of Goodrich and Goodyear, was not based on the absence of information by Standard. A broad study of the financial resources, the productive capacities, the investments in natural rubber plantations, and the experimental work in the synthetic rubber field by the four major companies had been made by Standard in the fall of 1939. This was at the time of the negotiations on the licensing contracts. A report of R. W. Lebo of Standard, on November 28, 1939, concerning the four major companies stated:

"The data presented show Goodyear and U. S. Rubber to be approximately equal in broad interests and abilities. [Mr. Lebo was apparently not familiar with Mr. Hopkins' reports to the effect that U. S. Rubber could not compare with Goodyear and Goodrich in regard to interest in and experience with Buna rubber.] In choosing one of these companies to do business with, *the object in mind would be in the deciding factor. If one was interested in large tire volume as the main requirement, a tire volume which was inherently steady and a fair volume of diversified rubber products, Goodyear would be the choice.* Should the chief interest be with diversified products along with a fair tire volume although possibly less stable, U. S. Rubber would be the choice" (exhibit 106).

STANDARD'S PLAN FOR ONE BIG COMPANY DOMINATED BY IT

In view of the positive assertion to the rubber companies on November 6, 1939, that I. G. Farbenindustrie had withdrawn completely from the buna development in the United States, it is surprising to note the contents of the cables between Howard and I. G. from November 14, 1939, until the following summer. On November 14, 1939, Howard cabled I. G. Farben as follows:

"Termeer ringer pursuant to my promise have discussed buna question with du Ponts before talking to others stop Their first position was that they would be willing to consider matter only on basis of exclusive license for straight royalty and even then only if we could not find any other satisfactory method of developing the process here stop They have just advised today however that they would like to consider taking a non-exclusive license on any fair basis on which we offer such licenses to others stop We shall continue to keep in contact with them" (exhibit 80A).

On December 22, 1939, Howard sent I. G. Farben another cable. The first few sentences are as follows:

"TERMEER RINGER. *Plan handling Buna as follows: First we desire ultimately group leading rubber companies in common company with us for most economical manufacture.* Stop. We cannot yet determine whether desirable include du Pont or other chemical interests in this venture."

The substance of the proposed license is then stated. The complete cable is found in appendix 49, exhibit 106.

The plan for one big company, to be dominated by Standard, for exploitation of synthetic rubber is more fully outlined in Howard's memorandum of January 2, 1940, previously referred to. He states:

"The outline of a plan for such a company might be as follows:

"Outline of industry company

"1. We would organize a corporation to which we would assign all of the I. G.-Jersey patent rights in the synthetic rubber field in return for all of its capital stock.

"2. 49% of the stock of this corporation would then be offered to all American rubber companies in proportion to their consumption of rubber for the last accounting period. For example, one share per ton per annum, which would mean perhaps 700,000 shares. Offering price on this basis might be a nominal figure of $1.00 per share. * * *

"The general purpose and effect of this plan would be to create a synthetic rubber business in which the supplier of the raw material and the owner of the original processes, that is Jersey, would have a one-half beneficial interest and control of the company, and the potential consumers of the product would have the other one-half interest. Each potential consumer would have a right to produce for his own requirements, but only at a rather high royalty rate. This

Digitized by Google

royalty rate plus the economies of the common plan would, however, be a maximum limit upon the total profit of the common company. * * *" (appendix 43, exhibit 99).

THE BIG PLAN HAS ITS FLAWS

Mr. Edward F. Johnson, attorney for Standard, gave his impression of Howard's big company plan in two letters to Howard. The first is dated March 12, 1940, and is worded as follows:

"DEAR FRANK: The attached memorandum contains a summary of my first impression of the essential facts involved in the synthetic rubber matter from the antitrust standpoint. Before going further, will you please read the memorandum and advise me whether or not you consider that any additional facts contained in the data which you gave me ought to be considered in determining the antitrust question" (exhibit 107).

The attached memorandum reads as follows:

"Jersey would own 51% of the voting stock of the New Company. 49% of such stock would be offered to all American rubber companies on the basis of their rubber consumption for the most recent accounting period. Arrangements might be made to adjust shareholdings of non-Jersey stockholders from time to time to keep them in line with their rubber consumption respectively. Newcomers in the rubber industry would be given the opportunity of joining the enterprise under fair conditions. There is no intention of excluding any rubber manufacturer from the opportunity of joining the enterprise.

"The New Company would hold:

(1) All patent rights of I. G. and Jersey in the synthetic rubber field;

(2) Cross-licenses under non-Jersey stockholders' patents in the synthetic rubber field covering improvements in the manufacture of synthetic rubber;

(3) An agreement that non-Jersey stockholders would not sue the customers of the new company for compounding and using synthetic rubber produced by the new company.

"The New Company would grant licenses to its stockholders, giving them the right to use the patents of the New Company in the manufacture of each stockholder's own requirements of synthetic rubber at the royalty rate of 7½¢ a pound. It is not expected that the licensees would engage directly in the manufacture of synthetic rubber under normal conditions.

"The New Company would engage directly in the manufacture of synthetic rubber and sell it to the industry.

"The New Company would grant to Jersey the preferred right to supply raw materials to the extent that they can be produced from oil or natural gas provided Jersey offers terms as favorable as any other supplier.

"There are other features of the plan which it is not necessary to consider in dealing with the antitrust question" (exhibit 108).

On March 13, 1940, Howard gave the following memorandum to Johnson:

"DEAR ED: The next to last paragraph of your memorandum reading:

> The new company would grant to Jersey the preferred right to supply raw materials to the extent that they can be produced from oil or natural gas provided Jersey offers terms as favorable as ny other supplier.

should be considered as out of the proposal as neither wise nor necessary.

"Aside from this I believe your summary is correct and sufficiently detailed for immediate purposes" (exhibit 109).

After submitting the plan to other counsel, Johnson wrote the following letter to Howard on April 2, 1940:

"DEAR MR. HOWARD: Since I do not have an extra copy of the memorandum in which Mr. Davis expressed his views on the rubber matter, I quote Mr. Davis' note in its entirety, as follows:

"'Jersey, as the holder of patents covering the production of synthetic rubber, is clearly entitled to produce synthetic rubber under its patented processes, and to exclude all others from the use of the patents. It is equally entitled to form a new corporation to operate under these patents. Further, I see no objection to Jersey, if it chooses, permitting others through stock ownership to acquire an interest in this new corporation, or granting of licenses by Jersey to others permitting them to operate under the patents. Nor is there necessarily any objection to having the new corporation acquire cross-licenses from persons holding other patents useful in the manufacture of synthetic rubber.

Digitized by Google

"'The ownership of patents, however, cannot be used as a cloak, whether directly or indirectly, to cover violations of the antitrust laws. So the fact that Jersey owns a particular group of patents on synthetic rubber cannot be used as a basis for preventing or restraining competition by others in the manufacture of synthetic rubber, whether under their own patents or otherwise, except to the extent that the processes of these others infringe upon the Jersey patents. Consequently, I should have considerable hesitation in approving any plan which would result in discouraging or preventing others from manufacturing or developing synthetic rubber under their own processes; and to the extent that the proposed plan involves the taking in of potential competitors as stockholders in the new company, its purpose and effect from this angle should be carefully considered.'

"It is clear to the lawyers that the plan suggested in your memorandum is one which in our judgment cannot be successfully defended. It seems to me to be important that before commitments are made we have an opportunity to study any new proposition and to discuss it with Mr. Davis.

"Indications are that the Supreme Court will limit the scope of patent rights to the field covered by the grant and will not permit the extension of the patent monopoly through agreements with others. Even a set-up providing for stock participation by the rubber industry in a company owning our patent rights in the synthetic rubber field will have to be, in my judgment, very carefully analyzed. It is possible, though I know of no decision so holding, that the Supreme Court could well say that the combination brought about through stock ownership in the new company would of itself constitute a monopoly not inherent in the patent itself, and that because of such combination the interests of the rubber industry would be so tied to the new corporation as to tend to remove what otherwise would be normal competition. Otherwise stated, although the patent permits us to have and to exercise a monopoly, it may be held that, while bringing others into the patent holding company as stockholders does not extend the scope of the patent, it does tend to remove the incentive of the industry to bring about competition through inventive or other means. Cross-licensing provisions would add support to this theory. This may not be even a probable result of such plan, though it seems to me to be well within the realm of possibility" (exhibit 110).

Howard may have been temporarily slowed down on his grandiose scheme by the warnings of the lawyers. Certainly he was not completely dissuaded. Two months later he proposed that this impediment to Standard's achieving a monopoly be brushed aside. In a letter to E. R. Stettinius, Jr., member of the Advisory Commission for National Defense, dated June 11, 1940, Howard, after discussing the financial problems incident to the synthetic-rubber program, states:

"Entirely aside from the financial questions, there is the difficulty which the antitrust laws present in attempting to formulate any plan for cooperation along financial 'technical' and patent lines between competitive units * * *"

and further—

"In our opinion, enabling legislation, removing the real or arguable cloud thrown by the antitrust laws on any corporative plans of this character, is therefore essential" (appendix 50, exhibit 111).

TEAGLE STILL FAVORS A DU PONT PARTNERSHIP

On January 9, 1940, Howard attached a copy of the memorandum containing his big company plan to a memorandum to R. W. Gallagher, Standard's director. The following is a copy (exhibit 112):

"DEAR RALPH: I have had a talk with Mr. Teagle in which I brought him up to date on the main outlines of the chemical problems we have recently been considering, and he also read a copy of the attached memorandum on the synthetic-rubber matter.

"He wishes to think the situation over a little and talk to you and me together about it before he returns to Georgia. The memorandum may be of some assistance to you in preparation for this talk.

"I might say that Mr. Teagle's mind seems to be going in the direction that a Dupont partnership would be a better solution of the synthetic -rubber problem than any other.

"I am not yet ready to reach any final conclusion myself. I certainly do not particularly favor at this moment the plan covered by the attached memorandum; it seemed necessary to have some concrete statement of this situation, however,

Digitized by Google

"All manufacturing patent rights of Licensees will help to build up Licensor's dominating position, but no Licensee will get the benefit of any other Licensee's manufacturing patent rights. In other words, this is not a cross-licensing agreement, but one in which patents are piled on patents in the hands of one centralizing company" (exhibit 98).

F. A. Howard in a memorandum of January 2, 1940, described the license situation as follows:

"To meet the pressure for Perbunan in the United States, we agreed to offer licenses to the four largest rubber companies under the I. G. synthetic rubber processes but only under conditions which would still leave open to us the possibility of entering the business actively in some way ourselves. The main limitations were a rather high royalty rate, seven and one-half cents per pound, the limitation on production to the licensee's own requirements, and rather far-reaching cross-licensing provisions.

"Of the four companies to whom these proposals have been made, only Goodrich and Goodyear have been active in following them up. Discussions with these companies indicate that to the extent we meet their wishes for the liberalization of the licensing contracts we shall cut away the foundations upon which our own plans would have to rest. While we have told them that in general it is our hope to work out some joint project ultimately, we have assumed no commitment to do so and therefore at the present time they are looking at the license contract we are offering to them as though it were the only thing they would ever receive from us. One cannot blame them for being critical of many of its provisions under these conditions" (appendix 43, exhibit 99).

When the license, with its objectionable features, was submitted to Goodyear its manager, L. B. Sebrell, wrote M. B. Hopkins on December 7, 1939, pointing out the provisions which Goodyear could not accept (exhibit 100). In general, these were the restrictive provisions referred to by the Standard officials above. Standard refused to change the terms of the license and negotiations between the parties stopped in February 1940. (See executive committee memorandum of February 9, 1940, appendix 44, exhibit 101.)

Goodrich had likewise objected to the provisions of the license (1) which piled up improvements in Standard Development, the licensor, and (2) which prohibited manufacture for sale to others than Standard. The executive committee memoranda of January 25, 1940, show that "Mr. Howard said that he did not favor surrendering on these two points, and committee expressed their accord with that view" (appendix 45, exhibit 102).

Thus Goodyear and Goodrich, who had done more experimental work in the field of synthetic rubber than the other two major rubber companies, were left out of the picture. Hopkins in his letters to Howard had pointed out that neither Firestone nor United States Rubber had either the interest or the experience in synthetic rubber of Goodyear and Goodrich.

Firestone agreed to take the license offered, except for minor changes, in March 1940. In notifying the executive committee of this in his letter to A. C. Minton March 7, 1940, Howard suggested using the Firestone agreement to force immediate acceptance of their license by the other companies.

"I believe we are far enough advanced with our butyl rubber development so that we could now bring this into the discussions, *although our natural course would be to hold off some time longer on any disclosure of butyl rubber*" (appendix 46, exhibit 103).

This was exactly 2 years after the full disclosure of butyl rubber to the Germans.

Standard knew that its own butyl process made it possible to produce synthetic rubber more cheaply than could be done by any other process. The plan was to force the reluctant rubber companies to accept the objectionable license on buna by using the threat implicit in the disclosure of the butyl process. The first public announcement of butyl was made at the stockholders' meeting June 4, 1940 (appendix 47, exhibit 104). The final sentences in Farish's announcement were:

"As in the case of Buna rubber, the commercial development of the Butyl rubber will be in stages, the first stage being the manufacture of relatively small quantities for the specialty market and for commercial testing in tire production. Should it become necessary for the United States to produce synthetic rubber in substitution for a major portion of imported natural rubber, we are in a position to manufacture the Butyl Rubber from petroleum in any required quantities as rapidly as the necessary plant facilities can be installed."

Digitized by Google

United States Rubber was the only company, other than Firestone, to accept the license as drawn. This was done on June 18, 1940 (appendix 48, exhibit 105).

The action which resulted in the licensing of Firestone and United States Rubber, and the exclusion of Goodrich and Goodyear, was not based on the absence of information by Standard. A broad study of the financial resources, the productive capacities, the investments in natural rubber plantations, and the experimental work in the synthetic rubber field by the four major companies had been made by Standard in the fall of 1939. This was at the time of the negotiations on the licensing contracts. A report of R. W. Lebo of Standard, on November 28, 1939, concerning the four major companies stated:

"The data presented show Goodyear and U. S. Rubber to be approximately equal in broad interests and abilities. [Mr. Lebo was apparently not familiar with Mr. Hopkins' reports to the effect that U. S. Rubber could not compare with Goodyear and Goodrich in regard to interest in and experience with Buna rubber.] In choosing one of these companies to do business with, *the object in mind would be in the deciding factor. If one was interested in large tire volume as the main requirement, a tire volume which was inherently steady and a fair volume of diversified rubber products, Goodyear would be the choice.* Should the chief interest be with diversified products along with a fair tire volume although possibly less stable, U. S. Rubber would be the choice" (exhibit 106).

STANDARD'S PLAN FOR ONE BIG COMPANY DOMINATED BY IT

In view of the positive assertion to the rubber companies on November 6, 1939, that I. G. Farbenindustrie had withdrawn completely from the buna development in the United States, it is surprising to note the contents of the cables between Howard and I. G. from November 14, 1939, until the following summer. On November 14, 1939, Howard cabled I. G. Farben as follows:

"Termeer ringer pursuant to my promise have discussed buna question with du Ponts before talking to others stop Their first position was that they would be willing to consider matter only on basis of exclusive license for straight royalty and even then only if we could not find any other satisfactory method of developing the process here stop They have just advised today however that they would like to consider taking a non-exclusive license on any fair basis on which we offer such licenses to others stop We shall continue to keep in contact with them" (exhibit 80A).

On December 22, 1939, Howard sent I. G. Farben another cable. The first few sentences are as follows:

"TERMEER RINGER. *Plan handling Buna as follows: First we desire ultimately group leading rubber companies in common company with us for most economical manufacture.* Stop. We cannot yet determine whether desirable include du Pont or other chemical interests in this venture."

The substance of the proposed license is then stated. The complete cable is found in appendix 49, exhibit 106.

The plan for one big company, to be dominated by Standard, for exploitation of synthetic rubber is more fully outlined in Howard's memorandum of January 2, 1940, previously referred to. He states:

"The outline of a plan for such a company might be as follows:

"Outline of industry company

"1. We would organize a corporation to which we would assign all of the I. G.-Jersey patent rights in the synthetic rubber field in return for all of its capital stock.

"2. 49% of the stock of this corporation would then be offered to all American rubber companies in proportion to their consumption of rubber for the last accounting period. For example, one share per ton per annum, which would mean perhaps 700,000 shares. Offering price on this basis might be a nominal figure of $1.00 per share. * * *

"The general purpose and effect of this plan would be to create a synthetic rubber business in which the supplier of the raw material and the owner of the original processes, that is Jersey, would have a one-half beneficial interest and control of the company, and the potential consumers of the product would have the other one-half interest. Each potential consumer would have a right to produce for his own requirements, but only at a rather high royalty rate. This

Digitized by Google

royalty rate plus the economies of the common plan would, however, be a maximum limit upon the total profit of the common company. * * *" (appendix 43, exhibit 99).

THE BIG PLAN HAS ITS FLAWS

Mr. Edward F. Johnson, attorney for Standard, gave his impression of Howard's big company plan in two letters to Howard. The first is dated March 12, 1940, and is worded as follows:

"DEAR FRANK: The attached memorandum contains a summary of my first impression of the essential facts involved in the synthetic rubber matter from the antitrust standpoint. Before going further, will you please read the memorandum and advise me whether or not you consider that any additional facts contained in the data which you gave me ought to be considered in determining the antitrust question" (exhibit 107).

The attached memorandum reads as follows:

"Jersey would own 51% of the voting stock of the New Company. 49% of such stock would be offered to all American rubber companies on the basis of their rubber consumption for the most recent accounting period. Arrangements might be made to adjust shareholdings of non-Jersey stockholders from time to time to keep them in line with their rubber consumption respectively. Newcomers in the rubber industry would be given the opportunity of joining the enterprise under fair conditions. There is no intention of excluding any rubber manufacturer from the opportunity of joining the enterprise.

"The New Company would hold:

(1) All patent rights of I. G. and Jersey in the synthetic rubber field;
(2) Cross-licenses under non-Jersey stockholders' patents in the synthetic rubber field covering improvements in the manufacture of synthetic rubber;
(3) An agreement that non-Jersey stockholders would not sue the customers of the new company for compounding and using synthetic rubber produced by the new company.

"The New Company would grant licenses to its stockholders, giving them the right to use the patents of the New Company in the manufacture of each stockholder's own requirements of synthetic rubber at the royalty rate of 7½¢ a pound. It is not expected that the licensees would engage directly in the manufacture of synthetic rubber under normal conditions.

"The New Company would engage directly in the manufacture of synthetic rubber and sell it to the industry.

"The New Company would grant to Jersey the preferred right to supply raw materials to the extent that they can be produced from oil or natural gas provided Jersey offers terms as favorable as any other supplier.

"There are other features of the plan which it is not necessary to consider in dealing with the antitrust question" (exhibit 108).

On March 13, 1940, Howard gave the following memorandum to Johnson:

"DEAR ED: The next to last paragraph of your memorandum reading:

> The new company would grant to Jersey the preferred right to supply raw materials to the extent that they can be produced from oil or natural gas provided Jersey offers terms as favorable as ny other supplier.

should be considered as out of the proposal as neither wise nor necessary.

"Aside from this I believe your summary is correct and sufficiently detailed for immediate purposes" (exhibit 109).

After submitting the plan to other counsel, Johnson wrote the following letter to Howard on April 2, 1940:

"DEAR MR. HOWARD: Since I do not have an extra copy of the memorandum in which Mr. Davis expressed his views on the rubber matter, I quote Mr. Davis' note in its entirety, as follows:

" 'Jersey, as the holder of patents covering the production of synthetic rubber, is clearly entitled to produce synthetic rubber under its patented processes, and to exclude all others from the use of the patents. It is equally entitled to form a new corporation to operate under these patents. Further, I see no objection to Jersey, if it chooses, permitting others through stock ownership to acquire an interest in this new corporation, or granting of licenses by Jersey to others permitting them to operate under the patents. Nor is there necessarily any objection to having the new corporation acquire cross-licenses from persons holding other patents useful in the manufacture of synthetic rubber.

Digitized by Google

"'The ownership of patents, however, cannot be used as a cloak, whether directly or indirectly, to cover violations of the antitrust laws. So the fact that Jersey owns a particular group of patents on synthetic rubber cannot be used as a basis for preventing or restraining competition by others in the manufacture of synthetic rubber, whether under their own patents or otherwise, except to the extent that the processes of these others infringe upon the Jersey patents. Consequently, I should have considerable hesitation in approving any plan which would result in discouraging or preventing others from manufacturing or developing synthetic rubber under their own processes; and to the extent that the proposed plan involves the taking in of potential competitors as stockholders in the new company, its purpose and effect from this angle should be carefully considered.'

"It is clear to the lawyers that the plan suggested in your memorandum is one which in our judgment cannot be successfully defended. It seems to me to be important that before commitments are made we have an opportunity to study any new proposition and to discuss it with Mr. Davis.

"Indications are that the Supreme Court will limit the scope of patent rights to the field covered by the grant and will not permit the extension of the patent monopoly through agreements with others. Even a set-up providing for stock participation by the rubber industry in a company owning our patent rights in the synthetic rubber field will have to be, in my judgment, very carefully analyzed. It is possible, though I know of no decision so holding, that the Supreme Court could well say that the combination brought about through stock ownership in the new company would of itself constitute a monopoly not inherent in the patent itself, and that because of such combination the interests of the rubber industry would be so tied to the new corporation as to tend to remove what otherwise would be normal competition. Otherwise stated, although the patent permits us to have and to exercise a monopoly, it may be held that, while bringing others into the patent holding company as stockholders does not extend the scope of the patent, it does tend to remove the incentive of the industry to bring about competition through inventive or other means. Cross-licensing provisions would add support to this theory. This may not be even a probable result of such plan, though it seems to me to be well within the realm of possibility" (exhibit 110).

Howard may have been temporarily slowed down on his grandiose scheme by the warnings of the lawyers. Certainly he was not completely dissuaded. Two months later he proposed that this impediment to Standard's achieving a monopoly be brushed aside. In a letter to E. R. Stettinius, Jr., member of the Advisory Commission for National Defense, dated June 11, 1940, Howard, after discussing the financial problems incident to the synthetic-rubber program, states:

"Entirely aside from the financial questions, there is the difficulty which the antitrust laws present in attempting to formulate any plan for cooperation along financial 'technical' and patent lines between competitive units * * *"

and further—

"In our opinion, enabling legislation, removing the real or arguable cloud thrown by the antitrust laws on any corporative plans of this character, is therefore essential" (appendix 50, exhibit 111).

TEAGLE STILL FAVORS A DU PONT PARTNERSHIP

On January 9, 1940, Howard attached a copy of the memorandum containing his big company plan to a memorandum to R. W. Gallagher, Standard's director. The following is a copy (exhibit 112):

"DEAR RALPH: I have had a talk with Mr. Teagle in which I brought him up to date on the main outlines of the chemical problems we have recently been considering, and he also read a copy of the attached memorandum on the synthetic-rubber matter.

"He wishes to think the situation over a little and talk to you and me together about it before he returns to Georgia. The memorandum may be of some assistance to you in preparation for this talk.

"I might say that Mr. Teagle's mind seems to be going in the direction that a Dupont partnership would be a better solution of the synthetic -rubber problem than any other.

"I am not yet ready to reach any final conclusion myself. I certainly do not particularly favor at this moment the plan covered by the attached memorandum; it seemed necessary to have some concrete statement of this situation, however,

Digitized by Google

before we could think clearly about it, and the memorandum was only intended to serve that purpose.

"F. A. HOWARD."

STANDARD'S COST FIGURES NOT DISCLOSED

In the summer of 1940 Standard entered upon an intensive campaign to secure a synthetic-rubber program along the following lines: It desired the Government to finance a large development of buna rubber in which the rubber companies and Standard would participate. At the same time Standard would hold out its butyl development.

In June it caused computations to be made showing the investment and production costs of Buna S and butyl rubber in plants of 100 tons per day and 300 tons per day capacity. As has been stated heretofore, the figures were as follows for a 300 ton per day plant, or approximately 109,000 tons per year:

	Buna S	Butyl
Investment	49,600,000	23,800,000.
Production cost	14.4 cents per pound	6.6 cents per pound.
15 percent return on the investment would add	3.2 cents per pound	1.63 cents per pound.
Total cost, including 15 percent return	17.6 cents per pound	8.23 cents per pound.

The withholding of this information from the Government representatives is one of the most unfortunate factors in the entire synthetic rubber story. The reason the figures were kept secret is obvious. Standard could not have made its campaign for Government financing, subsidy, and pressure upon the rubber companies if it had not kept alive the false impression that synthetic rubber could not be made and sold at prevailing natural rubber prices—20 cents per pound then, 22½ cents per pound subsequently.

This erroneous impression is shown in a newspaper story found in the Standard files. It is a clipping from the Journal of Commerce for October 1, 1940. It contains the following statement by Mr. Jesse Jones of the Reconstruction Finance Corporation:

"Mr. Jones stressed that production costs of artificial rubber, according to Devense Commission estimates, are 25¢ a pound compared with a price of 18¢ to 20¢ a pound paid by the Government for natural rubber for the strategic materials reserve stock pile. He added that estimates worked out so far show that it should cost $500 per ton of capacity to build plants for the production of the synthetic product" (exhibit 113).

For 109,000 tons this investment cost is $54,750,000 as compared with Standard's figures of $49,600,000 for Buna S and $23,800,000 for Butyl rubber.

PRESSURE FOR GOVERNMENT FINANCING

On July 11, 1940, Howard prepared a memorandum for Farish reporting a discussion with officials of Firestone and United States Rubber:

"Out of our discussion on this line we arrived at the following conclusion: that the synthetic rubber field might be regarded as made up of three branches—the Neoprene branch, the Butyl rubber branch, and the Buna rubber branch. No one save du Pont knew anything about Neoprene or claimed to have any patent position or experience. The same applied to Jersey as regards butyl rubber. As regards Buna, this was of course primarily a German development which Jersey had taken over for the U. S. There were several other American companies however who had done a certain amount of work in various branches of the Buna development. In view of this situation it would be logical to ask all the companies interested in the various stages of the Buna development to pool their patent rights and experience if a Government-financed emergency plant were decided to be necessary. Both du Pont and Jersey might join in this pooled effort in connection with an emergency Buna plant, each retaining its separate position as to Neoprene and butyl rubber" (exhibit 114).

The Advisory Commission to the Council of National Defense (of which E. R. Stettinius, Jr., was a member) had a synthetic rubber committee. This committee held a meeting to consider a plan for synthetic rubber development on July 17, 1940. Howard reported the meeting in a memorandum of July 18, 1940, which contains the following statement:

Digitized by Google

"The tentative program on synthetic rubber as agreed to by the Stettinius group committee at their meeting July 17 is as follows:

"(1) The Government should finance plans for the construction of facilities for the production of 100,000 tons per annum synthetic rubber, divided about as follows: Neoprene, 10,000 tons; Butyl, 30,000 tons; Buna, 60,000 tons" (exhibit 115).

On July 30, 1940, Howard sent a memorandum to Dr. Robert E. Wilson, president of Pan American Transport Co., who was in Washington as a member of the committee which had met on July 17. In the memorandum Howard advocated a plan:

"PLAN

"(1) To provide a permanent protection for synthetic tire rubber in the amount of at least 100,000 tons per annum.

"(2) To provide for the immediate erection of government-financed synthetic rubber tire plants of a capacity of about 60,000 to 80,000 tons per annum, with the expectation that the balance of the 100,000 ton capacity desired will be installed immediately by private initiative under the incentive provided by the protection.

"(3) To provide that all interested parties unite and contribute their patent rights and experience to the extent needed for the carrying out of a government-financed tire rubber program, and that the selection of projects and the allocation of funds be a responsibility of the rubber industry itself, and not the act of any administrative agency of the Government, but with a reserved government veto power.

"PROGRAM

"*1st step.*—Appropriate legislation to be immediately framed and introduced by the Administration authorizing the Treasury to rebate to tire manufacturers the excise tax on tires in proportion to the extent of their use of American produced rubber in such tires . . ." (exhibit 116).

He computed the protection thus given to be such that synthetic rubber would have a protection of 20 cents per pound over natural rubber.

The Standard executive committee memoranda for August 6, 1940, contain the following:

"Mr. Howard advised of receipt of a telegram from Mr. Clarence Francis of the National Defense Advisory Commission confirming the meeting to be held in Washington on August 7 to consider all necessary steps to provide total capacity for synthetic rubber of 100,000 tons per annum, and suggested methods of insuring a market for this quantity. The telegram advised, also, that the industry will be asked to engineer, at its own expense, plants which represent the practical commercial units fitting into the program, making whatever arrangements necessary for raw materials. Plants to be engineered should be in general accord with a feasible program for our interests alone or in cooperation with others. No definite commitments will be asked for at this time with respect to plant construction.

"Mr. Howard said it would be his preference that we not invest any considerable sums in the manufacture of buna rubber, but give such aid and advice as might be helpful. He preferred, in view of the greater possibilities of our interests' butyl rubber, to advise the Committee that we are considering building a plant to manufacture 10,000 tons per annum of butyl rubber, but that if the Government would be interested in giving protection to the extent of 5¢ per pound to the whole rubber field, our interests might be willing to construct a plant to manufacture up to 30,000 tons of butyl rubber per annum on a five-year contract basis" (exhibit 117).

The executive committee memoranda for August 8, 1940, contain the following statement:

"Mr. Farish advised Mr. F. A. Howard reported having attended a meeting with Messrs. Robert Wilson, Weidlin, and others in Washington yesterday on the subject of synthetic rubber supplies, at which meeting two general conclusions had been agreed to, i. e., that capacity for 100,000 tons per annum of synthetic rubber should be installed as soon as possible, and, in order to secure this result, two things would be necessary: (1) a permanent protection policy by the Government, and (2) Government financing, in large part, of any installations for this purpose" (exhibit 118).

Digitized by Google

At the meeting of August 7 just referred to, Standard undertook to prepare plans for a butyl plant. Clarence Francis, chairman of the Special Committee of the Advisory Commission of National Defense, wrote Howard August 14, 1940:

"It is the understanding of the Committee that your company is proceeding, at its own expense, with preliminary engineering plans for plant capable of producing 30,000 tons of synthetic rubber per year. In accordance with the memorandum circulated at the meeting, we understand that you will:

(*a*) Select site.

(*b*) Prepare plans sufficient for general process and plant lay-out. No details.

(*c*) Estimate plant costs and product cost based on 5-year amortization.

(*d*) Show separately any necessary additions to land or other parts of plant outside synthetic rubber boundary limits, i. e., power, roads, tracks, etc.

"It is our further understanding that these preliminary plans will have been completed and submitted to the Committee within two months of the date of the meeting, i. e., not later than October 7, 1940. If the plans can be completed in less time than this, the committee will appreciate it very much if they are submitted as soon as they are finished" (exhibit 119).

On August 23, 1940, Howard wrote Francis:

"We submitted at your meeting a pencilled statement saying that we were ready to proceed with the engineering of a butyl rubber project between 10,000 and 30,000 tons per annum pedending upon the kind and amount of financing and protection offered. In your letter you advised that we were understood to have offered to engineer a 30,000-ton plant. We realize that this is the time for action, not for delay, and are therefore proceeding without further question to engineer the 30,000-ton plant at a location where it can be expanded five fold at maximum speed if necessary. But when the plan for financing and protection is offered it may fail to meet our necessities to such an extent that the plant size and location may both be wrong. The result will be delay" (exhibit 120).

On October 7, 1940, the deadline for submission of plans and cost figures, Howard wrote a letter to the Chairman, Synthetic Rubber Committee, Advisory Council to Commission of National Defense:

"On August 23rd we advised Mr. Francis that we were proceeding with the general engineering studies, estimates, and plans for the production of 30,000 tons per annum of synthetic rubber, and it was understood by all that the project referred to was for the production of Butyl rubber. This work has gone forward; general plans and estimates have been completed and in case of necessity could be amplified in the detail necessary for actual construction as contemplated by the preparatory program of the Committee adopted at the last general meeting of all the interested parties in Washington.

"With the permission of the Commitee we should, however, like to hold these plans for the 30,000-ton Butyl project in reserve for the time being and to present, in substitution therefor, two engineering studies covering the manufacture of butadiene. One of these will be furnished by the Humble Oil & Refining Co. for a plant at Baytown, Texas, and the other we are submitting herewith in behalf of the Standard Oil Co. of Louisiana covering a plant at Baton Rouge" (exhibit 121).

The problem of financing the synthetic-rubber development was turned over to the Reconstruction Finance Corporation by the Advisory Commission to the Council of National Defense. Negotiations were had between Standard officials and Jesse Jones.

The executive committee memoranda of November 29, 1940, contain the following:

"Mr. Gallagher reported that in the last conference Messrs. F. A. Howard and H. C. Wiess had with Mr. Jesse Jones, the latter indicated it appeared the Government's view of cooperation in insuring some manufacture of buna rubber in the United States would be to accomplish what could be done for not more than $30,000,000. He said Messrs. Howard and Wiess, in reviewing this problem, were going to suggest to Mr. Jones that our interests give four rubber companies 10,000 tons per year each of synthetic rubber; that the rubber companies put a price of 30¢ per pound on sales of this rubber to the Government; and that the Government make prepayment to the rubber companies for a five-year supply of the rubber, which would mean 50,000 tons total from each rubber com-

Digitized by Google

pany. This would make available the required money for rubber companies' required capital investments for this purpose. If the Government for any reason did not buy all the quantity agreed upon, they would not have the privilege of recovering the prepayment from the companies. Jersey interests would expect to secure 1½¢ royalty per pound from two of the rubber companies, i. e., Firestone and U. S., but it is not clear just what they might do in this respect with the two other companies. Present discussions in Washington are going on somewhat along the above lines" (exhibit 122).

The Reconstruction Finance Corporation asked for proposals for the construction of four plants for the production of 40,000 tons per annum (exhibit 123).

The executive committee memoranda for February 25, 1941, contain the following:

"In this connection, Mr. Howard stated Firestone would like to join with our interests in recommending to the R. F. C. that it revise the agreed-upon rubber program so as to require a total of four 2,500-ton plants instead of four 10,000-ton plants, under which revised program it would not be contemplated that our interests would receive any financing through the R. F. C., nor would the rubber companies change their agreed-upon price to R. F. C. for synthetic rubber if our interests were willing to stand by their previously indicated price of 17¢ per pound for the butadiene. He said he would like to: (1) indicate to Firestone and U. S. Rubber that our interests favor this approach * * *" (exhibit 124).

Two days later, on February 27, 1941, Howard wrote W. L. Clayton, of the Reconstruction Finance Corporation, giving him a brief history of Standard's interest in the synthetic rubber business. He stated:

"As owners of the patents we are ready to license all four proposed plants on the basis already accepted by Firestone and U. S. Rubber. The principal difference of opinion between ourselves and the Goodyear and Goodrich companies at this time in connection with these licenses is the apparent desire of Goodyear and Goodrich to insist upon a license which would permit them to manufacture Buna type rubbers not only for use in their own plants for specialty purposes, but also for sale to other rubber manufacturers in competition with our production of Buna rubber for these specialty purposes in the plant which we are just now completing.

"We believe, and have acted and invested on the belief, that the synthetic rubber industry is in the long run economically sound, regardless of government assistance. We believe that within the next two years it may reach a total volume for all varieties of synthetic rubber of something like 35,000 tons per annum, which will probably be sold at prices in the range of about 35 to 75¢ per pound. This rubber will all be consumed in specialty markets, including a certain amount of premium-priced tire and tube products" (exhibit 125).

In a memorandum dated March 25, 1941, Howard discussed a plan for rubber program. Under this plan, Reconstruction Finance Corporation would advance funds for construction of four plants, each to have initial installed capacity of 2,500 tons and ultimate capacity of 10,000 tons. Each plant would be leased to one of the four leading rubber companies and it would obligate itself to produce not less than 625 tons of synthetic rubber per annum, including 312 tons of tire and tube rubber (exhibit 126). This plan was adopted by the Reconstruction Finance Corporation and, as outlined, contained the following provision:

"8. The R. F. C. will endeavor to secure satisfactory assurance from holders of patents that neither infringement nor royalties will be claimed in connection with the first year of this program."

Opposite the provision in the Standard copy of the proposed plan is the notation "our letter applied only to the production used in tires. F. A. H." Howard's initials are F. A. H. (exhibit 127).

PATENT RECOGNITION

On March 28, 1941, Howard wrote a letter to W. L. Clayton, Federal Loan Agency, in which he stated that Standard would "waive all patent royalties and infringement claims arising out of the manufacture, use, or sale at cost of small quantities (approximately 1,250 tons total) of synthetic tire rubber for experimental purposes under the one-year program which you are endeavoring to work out with the tire manufacturers" (exhibit 128).

Also on March 28, 1941, Howard wrote a letter to Dr. Robert E. Wilson:

"DEAR BOB: I have good reason to believe that an effort is being made to misrepresent the facts in connection with the Buna patents to various authori-

Digitized by Google

ties in Washington. The statements which are being circulated by persons who ought to know better are:

"(1) that the Germans have an interest in the Buna patents in the United States;

"(2) that Standard Oil Co. (New Jersey) is asking exorbitant royalties and other impossible conditions for a license;

"(3) that the rubber companies are quite sure that the Buna patents do not at all cover the products which they wish to make, but that they fear Standard will bring unwarranted suits.

"The attached memorandum covers what I think are the more important facts in this situation. In addition to the memorandum I am attaching a summary of and full text of the actual license contracts which were offered some months ago on the Buna patents to all four leading rubber companies. Firestone and U. S. Rubber have accepted an earlier draft of license contract for which the attached draft (which they have stated is agreeable to them in principle) is to be substituted.

"We would much prefer to handle this Buna matter entirely on its merits as a normal business transaction and to adjust our difficulties with the companies with whom we have not yet reached an agreement in the ordinary course of business. If, however, you should find that any effort is being made to bring the Government, directly or indirectly, into this Buna patent matter, I would be very pleased to have you use the attached memorandum in any way you see fit, and I would also, as you know, appreciate an opportunity to meet face to face anyone who has a complaint or criticism" (exhibit 129).

The attached memorandum dated March 28, 1941, is as follows:

"The Buna patent rights which Jersey controls in the main originate with the I. G. Farbenindustrie, with whom Jersey had a cooperative arrangement in this field for the ten years preceding the war. Just before the outbreak of the war Goodyear tried to acquire from the I. G. Farbenindustrie and Jersey an exclusive license under these patent rights for the United States. They were advised both by the I. G. and Jersey that they did not believe it was in the interest of the commercial development of this new industry to grant an exclusive license to anyone, but that they hoped to work out some plan under which the entire rubber industry could use the processes on a fair basis. On the outbreak of the war Jersey acquired from the I. G. their interest in the Buna patents for the United States and for the French and British Empires. The Goodyear company again endeavored to obtain from Jersey an exclusive license, which Jersey consistently refused to grant or discuss.

"The Goodrich company had also been in contact both with the I. G. and Jersey prior to the outbreak of the war. Their position was that they were further advanced in the manufacture of the Buna type synthetic rubbers than anyone else and that they would be glad to take a license provided they received special treatment commensurate with what they believed their special position in this field justified. After prolonged negotiation Jersey was unable to find any formula under which it could meet their desire for special consideration without putting Jersey in what it considered would be an impossible position vis-a-vis other licensees.

"Jersey states that it has never felt that it was practical to license these patents except on a uniform basis to all the four leading rubber manufacturers, and its opinion is that no one of these four largest companies is, in any important respect, sufficiently more advanced in the Buna field than the others, to justify more favored treatment than the others receive.

"The Firestone and U. S. Rubber companies have accepted a license from Jersey for the Buna process, and this same license has been offered both to Goodyear and to Goodrich, and is still open to them to accept.

"The rates of royalty asked in the license are from 3% to 7% of the sales price for various products and uses, with a maximum royalty of 1½¢ per lb. fixed on any rubber sold for tire purposes. The British Comptroller of Patents has fixed a flat royalty of 5% of the sales price for a much more limited license under similar patents in England under compulsory license proceedings. The license Jersey has offered has no limitation at all on the output or any attempt to control the prices. The one limitation which is important is that the licensees do not obtain the right to resell rubber for special purposes (uses other than tires and tubes). Jersey is willing to license any manufacturer to make such rubber for specialty purposes for his own consumption, but is itself in the business of making this rubber, and intends to reserve for itself under the

Digitized by Google

Buna patents the exclusive right to tell to rubber manufacturers who do not wish to (or are economically unable to) manufacture the product for themselves. The Buna rubber used and sold for specialty purposes is called "Perbunan" and is in direct competition with the du Pont company's product "Neoprene." The du Pont company have never been willing to license any manufacturer and still maintain a complete monopoly of this business. Jersey is breaking this monopoly by offering licenses to the rubber manufacturers to manufacture their own requirements of Perbunan and intends to be in direct competition with du Pont in the general market with its own Perbunan products" (exhibit 130).

On the same date March 28, 1941, Howard wrote R. R. Deupree, Chief of the Materials from Agriculture and Forest Products Section, Office of Production Management, and president of Procter & Gamble Co., the following:

"MARCH 28, 1941.

"Handed to Mr. Deupree in Mr. Teagle's office Friday morning (March 28th), not as a letter but as a memorandum which Mr. Deupree stated he would like to read, but would definitely destroy after reading.

"F. A. H."

"Mr. R. R. DEUPREE,
Washington, D. C.

"DEAR MR. DEUPREE: I understand that in substance the question is whether any patent situation exists in the synthetic-rubber industry which threatens to interfere in any way with the defense program.

"It is possible that the Goodyear and Goodrich rubber companies might assert that there is such a situation. The only basis for such assertion would be the fact that they have so far been unwilling to accept the license agreements which we have offered and which have been accepted by the Firestone and U. S. Rubber companies."

The remainder of the letter uses substantially the same language as in the previous memorandum (exhibit 131). On April 10, 1941, Howard wrote R. R. Deupree again and stated:

"If there is any real chance that our imports of rubber may be seriously reduced within the next two years (and I believe we all feel that there is some chance of this) I urge that we proceed at once with a program for the construction of four 10,000-ton rubber plants; one to be erected by each of the major tire manufacturers (who will have the responsibility himself for swallowing his own output of rubber in saleable tires) and simultaneously proceed with the necessary butadiene and styrene plants.

"I am sorry to say that I believe the record of the handling of this synthetic rubber matter, up to this moment, has not been a creditable one.

"It was our judgment in which the Firestone and United States Rubber Companies concurred that this 40,000-ton program represented the absolute minimum program which would meet the situation as it actually exists in the United States * * *" (exhibit 132).

On May 21 Frolich, director of the Esso Laboratories chemical division, attended a meeting in Washington under the auspices of Rubber Reserve Company (Reconstruction Finance Corporation), called by R. R. Deupree, of the Office of Production Management. Those present from industry were Street, of Firestone; Semon, of Goodrich; Dinsmore, of Goodyear; Roberts, of United States Rubber; Bridgewater, of du Pont; Curme, of Carbide & Carbon; and Frolich, of Standard Oil Development. Frolich reported the meeting in a confidential memorandum dated May 23, 1941, attached to a letter to E. V. Murphree dated May 26, 1941. The letter states:

"DEAR MR. MURPHREE: I am attaching some notes on the meeting held in Washington last Wednesday under the auspices of the Rubber Reserve Company to discuss a proposed Government project for the manufacture of 40,000 tons of tire rubber per annum.

"The proposal had the support of all the industrial representatives, but both Goodyear and Goodrich were in favor of going to 100,000 tons—Goodyear because of the imminent threat of a crude-rubber shortage and Goodrich on the ground that this would represent a more economical scale of operation. The opinions were somewhat divided in regard to the advisability of increasing the capacity of the recently authorized 2,500-ton polymerization units, as against constructing a new plant. The majority, however, was for utilizing the plants of the four major rubber companies" (exhibit 133).

Digitized by Google

In the memorandum Frolich states:

* * * * * * *

"It was agreed by all those present that in considering tire rubber we were primarily interested in neoprene and Buna S. However, very little was said about neoprene throughout the meeting, and the conversation centered entirely around Buna S, or, as it was frequently referred to, 'Buna S type rubber.'

"Even Dinsmore and Semon agreed that the raw materials with which we were concerned were butadiene and styrene. Neither one of them intimated that a substitute for styrene or a third component might enter into the picture. The only mention of another raw material was by Bridgewater, who suggested methacrylate as a possible alternate for styrene. At another point in the discussion he said that du Pont had developed two or three copolymers of butadiene which they considered superior to Buna S when used for tire construction. However, as those new copolymers had been under development for only three or four years, they were too new, in Bridgewater's opinion, to be considered for immediate commercial development.

"There was some discussion about our available supply of crude rubber. The Government representatives had referred to an 18-month supply, while some of the rubber people felt that we would be able to keep going for only 8 months in case imports were cut off. This prompted Mr. Deupree to explain that the 18-month estimate was based on *very severe* reduction in private or civilian consumption to the point where the present 600,000–800,000-ton figure would be cut to about 400,000 tons/year. It also included much more extensive reclaiming. At this point Dinsmore suggested that we would be more interested in the manufacture of 100,000 tons than 40,000 tons of synthetic tire rubber. However, Mr. Deupree asked that the discussion be limited to the 40,000-ton project.

* * * * * * *

"6. The next question aroused considerable discussion regarding the advisability of building a new 40,000-ton polymerization plant as against expanding the four 2,500-ton plants to a capacity of 10,000 tons each. Semon, Dinsmore, and Bridgewater all wanted the largest possible unit. In the course of the discussion Bridgewater elaborated on the difficulties that had been experienced in enlarging the scale of operation in the case of neoprene, which is not so difficult to understand, in view of the explosive nature of acetylene and its derivatives. Semon was against dividing the 40,000 tons among four polymerization plants on the ground that the units would be too small for economic operation. He said that Goodrich considers a 100,000-ton plant the most economic unit, and Street informed me afterwards that he suspected Goodrich would be making an effort to get the entire project.

"Semon also emphasized the obstacles that had had to be overcome at each stage in Goodrich's expansion through three stages of pilot-plant operation to their present scale of operation. I felt very much tempted to say that we had experienced no such difficulty in increasing our Perbunan production through stages of 5 to 25 to 10,000 pounds per day. However, I did not consider it advisable, in view of the patent situation, to belittle the technical problems involved, and merely said that I could see no difficulty, from an engineering point of view, in expanding from a 10,000-ton plant to, say, 50,000 tons.

"In line with our discussion with Mr. Howard earlier in the day, I emphasized that to get the best technical results and the maximum value out of the project, it would be most desirable to utilize the personnel of the four big rubber companies by expanding the four 2,500-ton units to a capacity of 10,000 tons each. This would place us in the best possible position from the standpoint of experience and trained personnel to undertake any subsequent expansion to some such scale as 200,000 or 300,000 tons/year. Curme agreed with me and so did Street.

* * * * * * *

"In bringing the meeting to a conclusion, Mr. Deupree said that he saw no need of discussing patents. He considered this an emergency proposition and the Government should therefore go ahead entirely unhampered. The time to face the patent problem was when it arose in connection with the plant operation, and he thought that the Government had a record of handling matters of that kind on a fair and square basis" (exhibit 134).

In the fall of 1941 Standard and the Federal Loan Agency were in negotiation as to the royalties which should be paid Standard for use of the buna patents. On October 14, 1941, W. L. Clayton, Deputy Administrator of Federal Loan Agency, wrote Howard as follows:

Digitized by Google

"The first time you are in Washington I will appreciate it if you will phone me, as I would like to discuss further the matter of royalties on your synthetic rubber patents" (exhibit 135).

On October 24, 1941, Howard reported to Teagle and Farish as follows:

"The following extract from my diary for last Wednesday, when I was in Washington, may interest you:

"Clayton offered 1 percent royalty, which I declined. I suggested informal arbitration, with W. H. Davis as an example of an arbitrator. Mr. Clayton will have to take the matter up with Jones before deciding what to do. At luncheon Crossland suggested compromise on basis of 1 percent royalty until such time as the R. F. C. makes money on the rubber, at which time the royalty would become 3 percent. I told him I had no authority to make this suggestion without the approval of my associates, that we could not accept in principle the theory that royalties were to be paid only if the Government made money, and that I would prefer to waive royalties entirely for a preliminary experimental period, say one year, and then charge the full normal royalty of 5 percent for the first 100,000 tons, 4 percent for the second 100,000, and 3 percent for the excess over 200,000" (exhibit 136).

On October 25, 1941, Clayton wrote Howard as follows:

"DEAR MR. HOWARD: Referring to our recent conversations regarding amount of royalty to be paid by Rubber Reserve Company for the use of your patents in connection with our synthetic program:

"Our position is that this program, at present intended to provide for the production of 40,000 tons of synthetic rubber per annum, is of an experimental and educational character to prepare the ground for a much larger program in case of need. Obviously, as long as natural rubber can be obtained, we cannot hope to put this synthetic rubber into automobile tires except at a loss.

"Accordingly, it is our feeling that during this experimental and educational period, your company should be willing to accept a token royalty payment.

"If because of increased cost of natural rubber, the utilization of synthetic rubber for commercial purposes, or through any other circumstances, it becomes possible to manufacture and market the product of these synthetic rubber plants on a commercial basis at a profit, we are prepared to give careful consideration at that time to a payment of a 3 percent royalty on the use of your patents.

"I will appreciate it if you will again review this matter with your associates and let me know if the above suggestion meets with your approval" (exhibit 137).

The following unsigned memorandum dated October 27, 1941, was taken from the Standard files:

"Notes on F. A. H.'s meeting in Washington October 27, 1941:

"1. Rubber royalty matter—Clayton suggested solution as follows: No royalty first year, 1 percent second year, 3 percent thereafter, which I accepted.

"2. Crossland agreed on one year contract for butadiene, negotiations to be resumed about September 1942 for renewal. Rathbone is to finish terms of contract directly with Crossland and attorneys. Price remains 13.16 cents" (exhibit 138).

On November 10, 1941, R. R. Deupree, president of the Procter & Gamble Co. and also an official of the Office of Production Management, wrote Howard on Procter & Gamble stationery as follows:

"DEAR MR. HOWARD: I was delighted to get a note from Will Clayton saying they had come to an understanding with you in regard to a royalty on the rubber matter. *It may not mean so much in money but I think it does do the thing that I was terribly concerned with and that is to have them recognize your patents.*

"As I had a short talk with Mr. Farish about this matter, tell him I hope that this settlement seemed all right to him for, as I said before, it was the principle of the thing that I think was important, *and while this may not mean such a terrible amount of money now, it may be the means of you getting a sufficient amount in the ultimate for the work you have done in connection with rubber*" (exhibit 139).

RÉSUMÉ OF STANDARD'S STRATEGY

Standard's advocacy of a large-scale Government-financed synthetic-rubber program, which has been discussed, was part and parcel of its scheme to end up with the domination of the entire rubber industry in itself. The strategy was:

(1) to try to persuade the rubber companies to come into the big-company plan;

Digitized by Google

(2) to frighten them to come in with the threat of competition from butyl rubber, over which Standard had sole control;

(3) to force a recognition of Standard's patent position in buna as incidental to a large-scale Government program.

Firestone took the first plunge by accepting the objectionable buna license in March 1940. United States Rubber held off a couple of months but came in after Standard's public announcement of butyl rubber. Goodrich and Goodyear remained adament—refusing to take the objectionable license and refusing to be frightened in under the threat of butyl rubber.

This grand strategy was made possible by the fact that Standard had in the fall of 1939 secured apparent control of the I. G. Farben patents on buna. The original plan had been for Standard and Farben to exploit the process in unison in the United States. For this reason Goodrich and Goodyear, which had been active in experimental work on buna, never reached an understanding with I. G. Farben despite their continued negotiations with the German company in the late thirties. To facilitate the original plan, Standard turned over its butyl process to Germany in 1938 soon after its discovery. This was done on the mere promise of I. G. Farben officials that they would try to secure the consent of the German Government for the exploitation of buna in the United States. Eventually, in the summer of 1940, when Germany was at war, the patents were turned over to Jasco. Standard never received the know-how at any time. As Hopkins wrote to Howard on October 20, 1939:

"You asked about the amount of technical information available on manufacture of Buna rubber. Excepting information Mr. Murphree was able to get when he went through an I. G. plant eight years ago, the only knowledge our people have is derived from published patents" (exhibit 140–A).

Nothing more was ever secured.

In the hands of Standard, the I. G. Farben patents constituted a real threat to Goodrich and Goodyear. By 1940 these companies had achieved considerable success in their independent experimental work in producing buna, and they indicated every intention of going forward with large-scale commercial development. The fear of infringement suits by I. G. Farben had been a constant hazard to them during the late thirties, but after the commencement of the war this threat would have little restraining effect. However, with Standard's taking over the patents, the threat became more imminent and actually resulted in the institution of infringement litigation.

In the fall of 1941 Standard served notice of possible patent infringement upon Goodrich (exhibit 140–B) and Goodyear (exhibit 141). Fearing that Goodrich would beat it to the draw, Howard wrote the following memorandum to President Farish on October 3, 1941:

"Memorandum to W. S. Farish.

"Unless you have some objection, we will follow the advice of our counsel and file today in Cleveland suit on the Buna patents against Goodrich and their subsidiary, Hycar Rubber Company. To get this suit filed today, we must telephone instructions before 2 o'clock.

"There is some danger that if we delay action even a day the Goodrich company may forestall us and file suit in New York against us for declaratory judgment, alleging that we have harassed them by threatening them with suit under our patents but have failed to bring such a suit.

"We would be very much better off to be plaintiffs in Ohio rather than defendants in New York [added after Mr. Farish saw memo].

"FRANK A. HOWARD.

"P. S. Haslam, Fisher, Hopkins agree.

Note on original to Mr. Minton (exhibit 142):

"Mr. Farish O. K.'d at luncheon, October 3rd.

"F. A. H."

The suit was filed against Goodrich in the Federal district court in Cleveland. However, our entrance into the war in December 1941 resulted in a voluntary dismissal of the suit by the parties (exhibit 143).

Goodyear refused to be forced into a recognition of the superiority of Standard's patent position. The declaration of war precluded any further infringement litigation for the time being.

At the instigation of the Rubber Reserve Company (Reconstruction Finance Corporation subsidiary), Standard and the four major rubber companies entered a patent pooling arrangement with regard to buna type synthetic rubber in Decem-

Digitized by Google

ber 1941. It is important to note that in this arrangement no reference was made to butyl, which continued to remain solely in Standard's hands. Companies using Standard's buna processes were to pay a royalty of 1 percent the first 5 years and 2 percent thereafter (exhibit 144).

This royalty arrangement ended with the entry of the consent decree of March 25, 1942, which specifically made the buna licenses royalty free for the duration of the war, with reasonable royalties thereafter (exhibit 10).

PART II. BUTYL RUBBER, STANDARD AND I. G. FARBEN

The first suggestion that the new copolymer of isobutylene and butadiene—later called butyl rubber—should be discussed with I. G. Farben is found in a letter dated January 20, 1938, from P. L. Young, patent attorney for Standard Development, to F. A. Howard, president of that company. It reads as follows:

"You will recall that recently Dr. Frolich and his associates have been doing some interesting work in connection with the copolymerization of butadiene and isobutylene. The polymers are sticky, rubbery materials, which, I understand, are capable of vulcanization. The question has arisen as to whether this material comes under our Oppanol Agreement, and whether it should be disclosed to I. G.

"You will understand that this material seems to stand halfway between polyisobutylene on the one side and butadiene rubber on the other. So far as I am aware, we have no rights in I. G.'s butadiene [Buna] rubber business. That may be because they had the rights prior to our agreements, or it may be that the synthetic rubbers are not intended to come under the general fields of our agreements. It would seem to me that it would probably come under the new Chemical Process agreement.

"So far no one has discussed this development with I. G., and we have not sent them a copy of our case which was filed a few weeks ago. On the other hand, I found the other day that a letter had been sent out by one of my men with a copy to the I. G., mentioning very briefly this subject matter. There is not a sufficient disclosure to tell them a great deal about it, but it may be enough to awaken their curiosity, so that I feel you should know this as soon as possible and that perhaps you might wish to discuss the whole matter on your *next European trip*" (exhibit 144–A).

The "next European trip" mentioned in this letter was taken a month or so later. Early in March Howard cabled Development for full information concerning the copolymer [butyl] to be given to I. G. Farben. The cable itself is not available. However, its contents are sufficiently revealed in the letters which were subsequently sent. The first is a letter dated March 9, 1938, from R. P. Russell, vice president of Development, to Howard in London (exhibit 46). It refers to an attached memorandum containing full technical information concerning butyl. It also urges in forceful language that the fruits of Standard's research efforts, recognized as having great value, should not be handed over to I. G. Farben without adequate safeguards of Standard's interests. Howard's answer dated March 15, 1938, recites the rapid strides which the Germans have made in the buna development (exhibit 47). It mentions the difficulties (Hitler's prohibition orders) in the way of proceeding in the normal manner with commercial development of buna in United States. The last paragraph reads:

"In view of the very genuine spirit of cooperation which Dr. ter Meer displayed, I am convinced that it is not only the right thing to do, but the best thing from every standpoint to pass on to them full information on the copolymer at this time. I do not believe we have anything to lose by this which is comparable with the possible benefit to all of our interests."

As has been previously stated, this letter and Howard's letter to I. G. Farben of the same date forwarding the butyl information to Germany were written just 4 days after Hitler's invasion of Austria. To a nation reaching for oil and faced with the necessity of being independent of natural rubber supplies no gift could have been more timely or more welcome. That this if anything would constitute a quid pro quo which would induce Hitler to release buna for exploitation in United States was exactly the assumption upon which Howard was acting.

Before the Truman committee, President Farish read a statement containing this language:

"While the butyl rubber was recognized by us from the beginning to have commercial possibilities it had no value to Germany's self-sufficiency program

Digitized by Google

because the main raw materials for the manufacture is isobutylene which comes from oil refining and which is not in Germany in the large quantities necessary. The same thing is true for Italy.

"For the reasons stated the disclosure of the butyl rubber at its early stage of development to the I. G. in 1938 was entirely consistent with the relation of the parties and could not possibly have had any political or military implications of any kind. All exchange of information on butyl rubber was discontinued in January 1940" (exhibit 145).

But Germany has large oil refineries owned by I. G. Farben, Standard's subsidiary—D. A. P. G., Shell's subsidiary, Rhenania, and others. I. G. has been making oppanol for many years, the chief raw material being isobutylene, the same as that used in butyl rubber. The invasion of Austria opened up tremendous new oil fields. The subsequent invasion of Hungary and Rumania gave still more oil.

Mr. Parish in his statement before the Truman committee said: "In 1938 soon after Standard had discovered this product it reported it to the I. G. in the normal way pursuant to the research arrangement between the parties in the field of synthetic rubber produced from oil" (exhibit 145).

This unquestionably refers to the arrangement contemplated by the Jasco agreement of September 30, 1930. It will be worth while to examine the pertinent provision of that contract. It is article II and it reads as follows:

"As soon as either party shall have developed a new chemical process which it is then free to assign to JOINT COMPANY under the provisions of Article III hereof, it shall acquaint the other party with all technical and commercial details thereof and give the other party an option, exercisable within four months, to elect whether the process in question shall be further investigated, tested, and developed by the JOINT COMPANY. If within the said four months the other party shall elect not to request that the process be so investigated, tested, and developed by the JOINT COMPANY then the process in question shall be thereafter free of the operation of this agreement. If within the said four months the other party so requests, the JOINT COMPANY shall undertake the investigation, testing, and further development of the process, and the originating party in the first instance and the other party as well to the extent possible for it, shall be bound to assist the JOINT COMPANY in all ways in such work, and especially by providing technical and trade information and experienced technical experts for carrying on the work" (exhibit 15).

Even under the Jasco contract Standard had no justification in awaiting orders from Germany as to butyl. From the foregoing letters it is clear that Standard made full disclosure concerning butyl to I. G. Farben on March 15, 1938. According to article II of the Jasco agreement, I. G. Farben had 4 months within which to decide whether it would have the development placed in Jasco in order that its exploitation should be for the benefit of both parties.

The 4-month period had elapsed and no such desire had been expressed by I. G. Farben. E. V. Murphree, director of Esso Laboratories, wrote Howard as follows on July 28, 1938:

"The data on the properties of the various copolymer compounds indicate that this development is going to be of considerable importance. The copolymer should be considerably cheaper to manufacture than a straight butadiene or blended butadiene polymers, as represented by the Buna's compounds. *I think the copolmyer work is approaching the stage where we would like to have the assistance if possible, of some rubber manufacturer to more definitely evaluate the compounds which can be produced*" (exhibit 146).

Again on August 19, 1938, Murphree wrote Howard as follows:

"In his letter of August 1st Dr. Frolich transmitted a memorandum relative to the progress of the development work on copolymer.

"You will note that the tensile strength of copolymer has been increased up to 3,400–3,500 lbs./sq. in. Very recently examples of copolymer have been produced which, after being compounded and vulcanized, gave a tensile strength of 3,800 lbs./sq. in., which is very comparable to rubber. The copolymer appears to be superior to rubber from the following standpoints: (1) Oxidation resistance, (2) Flexing resistance, (3) Resistance to abrasion.

"Considering the rapid progress which is being made in improving the properties of the copolymer, and considering the raw materials from which it is made, it is my feeling that it represents a more promising material than the I. G. Buna, although it has not been tested nearly as thoroughly. I have written

Digitized by Google

you previously pointing out the desirability of tying up with some rubber company in order to carry this development along more rapidly. I still feel that such an arrangement is very desirable" (exhibit 147).

It was nearly 2 years after this letter before the first contract was made with a tire company as hereafter shown.

On May 5, 1939, H. W. Fisher, manager of the Standard commercial department, wrote Howard as follows:

"We are submitting herewith information for your probable discussion with Dr. ter Meer of the progress of Buna S in the United States, and the status of our copolymer rubber.

"*Dr. Frolich and I both concur in the opinion that we have reached a stage in the development of copolymer, where it would be very advantageous to be able to establish contact with one or more of the major rubber companies. Phil Young advises me and Dr. Frolich concurs that we have filed sufficient patent applications on the manufacture of the material and on the major uses so that we can feel free, from a patent point of view in presenting this material to outsiders, at least in a limited way* * * *" (exhibit 148).

STANDARD FINALLY GETS APPARENT CONSENT FROM I. G. FARBEN TO THE SUBMISSION OF STANDARD'S OWN BUTYL RUBBER TO AMERICAN RUBBER COMPANIES

Recalling that butyl rubber had not been placed in Jasco and that I. G. Farben had not exercised an option to have it placed in Jasco although 14 months had passed since its first disclosure, it is astounding that Standard should be asking for consent to submit butyl to rubber manufacturers. On June 3, 1939, ter Meer in Frankfort wrote Howard in Paris:

"I confirm our telephone conversations of May 27th and June 2nd and wish to repeat briefly what we discussed over the phone. * * * *We have, of course, no objection if you want to submit your copolymer to the rubber-goods manufacturers in the U. S. A. for experiments.*

"As soon as our experiments in Oppau are carried through *we would like to discuss the copolymer question again with you with the aim to come to an arrangement with you in this field*" (appendix 68, exhibit 149).

It will be recalled that this was nearly 14 months after Howard had delivered the butyl information to Germany.

On June 15, 1939, Howard wrote Hopkins and Fisher as follows:

"During my stay in Europe I had several telephone conversations with Dr. ter Meer and enclose a letter from him summarizing the situation as it now stands as regards Buna and copolymer. *You will note that Dr. ter Meer has no objection to our taking up the copolymer with rubber manufacturers. I have the impression that the I. G. are of the opinion that we greatly overestimate the commercial possibilities of the copolymer*, and since their experience in this field is so much wider than our own we ought to give most careful consideration to their views.

"*My own tentative conclusion is that we should delay for some two or three months longer any decision on taking the matter up with any rubber manufacturers*—but the above is expressed only tentatively and is not intended to foreclose further consideration of this question" (exhibit 150).

Having received a copy of this letter, E. V. Murphree wrote Howard on June 18, 1939:

"I do feel that the copolymer development would be very greatly accelerated by a suitable arrangement with a rubber manufacturer for determining the application of the product, and from *this standpoint wish to recommend that you reconsider the desirability of postponing for two or three months such an arrangement.* I also think it may be desirable to make an arrangement with an electric wire and cable manufacturer on the use of copolymer in this field where, at least from laboratory results, it should have real application" (exhibit 151).

On June 22, 1939, R. P. Russell, vice president of Development, wrote Howard:

"This will refer to our discussion of June 20 on the subject of copolymer. I have talked this matter over with Messrs. Fisher, Hopkins, and Murphree, and I think we are all agreed on the following: 1. *We ought to be working vigorously with a U. S. tire manufacturer to explore the possibilities of application of our various copolymers for applications in the tire business*" (exhibit 152).

The fact is that no tire company was contacted with regard to butyl until exactly 1 year after the date of ter Meer's letter of June 3, 1939, purporting to give permission.

Digitized by Google

DID I. G. FARBEN UNDERESTIMATE BUTYL'S POSSIBILITIES?

In his letter to Howard dated June 3, 1939, ter Meer said: "We agree that the copolymer may be an improved Vixtanex but we do not believe that it is sufficiently rubberlike so as to replace natural rubber in major uses" (appendix 68, exhibit 149).

Dr. P. K. Frolich, director of the Standard chemical laboratories, wrote E. V. Murphree, director of the Esso general laboratories, on June 19, 1930. This was 2 months after the invasion and dissolution of Czechoslovakia and only 10 weeks before the invasion of Poland and the beginning of World War No. 2. The letter opens as follows:

"As you know, *Dr. Beller [of Chemnyco, I. G. Farben's N. Y. representative] has been quite disturbed for some time over the I. G.'s apparent lack of interest in our copolymer.* Although he realizes that this project is still in the research and development stage, he is rather impressed by our data as they have been communicated to him regularly in our Progress Reports and through his personal contacts with our organization. It is his opinion that the I. G. in Germany do not quite appreciate the potentialities of this development. I judge it to be his personal feeling that copolymer stands a good change of being more durable for tire-tread construction than Buna S, but, even if this should not be the case, he thinks that the I. G. should be interested in it as a material that has all the earmarks of being superior to Vistanex from the standpoint of its use in electrical insulation" (exhibit 153).

The real measure of I. G. Farben's appreciation of the properties of the new copolymer is clearly indicated in one of the numerous cables which they sent in the winter and spring of 1940–41 in connection with their close supervision and control over the terms of the buna licenses which Standard proposed to give to certain of the rubber companies. On December 22, 1939, Howard had sent a cable to I. G. Farben explaining that the plan was to form a common company to handle buna but that for the time being it would be necessary to grant licenses to the rubber companies to manufacture Perbunan or Buna N (exhibit 80–B). He set out in detail the terms of the proposed license and a verbatim definition of the term "process of manufacturing defined copolymer." The definition probably would not have included the new copolymer butyl. However, it is significant that it was I. G. Farben which made certain that butyl could not possibly be considered as included in the terms of the license. Recalling that the butyl patents were taken out by Standard employees and that I. G. Farben had no title to them, it is the more significant.

On February 16, 1940, I. G. Farben sent a cable in code to Chemnyco which was duly translated and transmitted to Standard. The cable covering a page and a half of suggestions as to changes and additions to the proposed license for buna is introduced as an exhibit. One of these suggestions was the following: "Finally add after the word '6 unsaturated ethers' the words '7 unsaturated esters, *provided that said copolymers do not contain less than 30 percent by weight of polymerized diolefines of the butadiene type*'" (exhibit 80–E). Since butyl contains 20 percent or less of butadiene or other diolefin of the butadiene type it is thereby explicitly excluded from the terms of the license.

The license as drawn carried this proviso exactly as suggested. Standard's patent attorney, W. E. Currie, had also suggested a proviso of this sort but it had not been included in Howard's cabled definition to I. G. Farben. In a letter of December 11, 1939, Currie commented upon a draft form of the license agreement. He states:

"3. The butyl rubber development is intended to be excluded by the percentage limitation on amounts of polymerizable material associated with the butadiene polymer" (exhibit 154).

In the summer of 1939 Frolich wanted to send one of butyl's coinventors to Germany to aid I. G. Farben. Reference has previously been made to the letter of June 19, 1939, in which Frolich commented upon I. G. Farben's apparent underestimation of butyl.

The main purpose of this letter was to propose that one of the Standard technical men take 100 pounds of butyl and go to Germany for education of I. G. Farben as to butyl techniques and further work in its development. The last three paragraphs of the letter are as follows:

"With regard to just who would be available for such an assignment, I should think that either Mr. Lightbown or Mr. Thomas could handle the job as well as

Digitized by Google

anybody. Mr. Lightbown has the advantage of having been trained in the rubber industry. However, if we send him, we will be giving up our only rubber chemist at a time when we are about to start operation of the pilot plant and I do not consider this desirable. Mr. Thomas, on the other hand, as one of the co-inventors of the copolymer process, is thoroughly familiar with the method of manufacturing the product and with the compounding and vulcanization technique which has been developed so far. Mr. Thomas would have no difficulty in turning out as good a rubber tire tread as Mr. Lightbown has been able to develop to date; but he will not have Mr. Lightbown's past experience to draw upon in solving new compounding problems that may arise on the spot.

"As you know, we are still having some difficulty in obtaining a satisfactory bond between a copolymer tread and a rubber carcass, but Dr. Beller feels that the I. G. might be helpful in solving this problem on the basis of their past experience with making Buna treads adhere. Moreover, Dr. Beller thinks that with the equipment at Leverkusen it should be possible to build a complete tire from copolymer so as to get away from the difficulty of bonding the synthetic product to natural rubber. We have had absolutely no experience in calendering copolymer on to fabric which is an essential step in the manufacture of a complete tire, so this is something which will have to be worked out by our men in cooperation with the I. G.'s personnel, in which case we probably would have to draw more on their experience than upon our own.

"Taking everything into consideration, I should think that Mr. Thomas would be the man to go over to Germany should you wish to go ahead with such a plan. If a decision is reached on this by the end of the week, it should be possible to have everything ready for him to leave here some time between the week ends of July 16 and July 23" (exhibit 153).

Mr. Murphree did not favor this proposal. On June 22, 1939, R. P. Russell, vice president of Standard Development, wrote Howard as follows:

"This will refer to our discussion of June 20 on the subject of copolymer. I have talked this matter over with Messrs. Fisher, Hopkins, and Murphree and I think we are all agreed on the following:

"1. We ought to be working vigorously with a U. S. tire manufacturer to explore the possibilities of application of our various copolymers for applications in the tire business.

"2. U. S. Rubber would be the most desirable organization for us to work with.

* * * * * * *

"Messrs. Fisher and Hopkins are giving some thought to the kind of an arrangement which should be entered into with U. S. Rubber and will communicate their recommended outline of such a deal to you within the next few days.

"Mr. Murphree does not agree with Dr. Frolich's recommendation that Thomas go to Germany since he feels that the efforts of all our personnel are needed locally over the near future, particularly if we do tie up with U. S. Mr. Murphree feels that the question of acquainting the I. G. with our present developments can be handled by sending 50 pounds of our product to Germany together with a complete memorandum outlining the work which has been done on it and the reasons why we believe the product offers promise" (exhibit 152).

BUTYL TESTS IN THE FALL OF 1939

Early in 1939 Standard had furnished small samples of butyl (referred to as product X) and of German Buna S and Buna N to the Munitions Board for testing. In spite of the repeated urgent suggestions of subordinate officials, Howard refused to allow contacts with tire companies. However, tests and comparisons were made in Standard's own laboratory.

On October 4, 1939, Frolich wrote Russell, vice president of Standard Development as follows:

"In response to your letter of September 27, I am attaching a table giving a rough comparison of the physical and chemical properties of vulcanizates of natural rubber, copolymer [butyl], Buna S, and Buna N.

"This comparison has been worked out by Messrs. Sparks and Lightbown on the basis of the best information we have been able to obtain to date. As our data on the two Buna products are rather meager, it is not possible for us to present the comparison on a quantitative basis giving actual numerical values. Although we had hoped to obtain such information by making tests

Digitized by Google

of our own on Buna N and on the limited amount of Buna S which we have on hand, we have not found it possible to spare the time for such studies in view of the pressure of the copolymer project.

"As you know, each one of these synthetic rubbers requires its own compounding and curing technique which has to be worked out by trial and error, and therefore is rather time-consuming" (exhibit 155).

The table below shows the comparative evaluation of natural rubber, butyl, and buna rubber. The numeral 1 indicates "excellent," 2 "good," 3 "fair," and 4 "poor." A comparison makes it quite obvious that butyl excels in more respects than any of the other three types (exhibit 156).

Comparison of Vulcanizates of Copolymer, Natural Rubber, and Buna

Property	Rubber	Copolymer	Buna	
			S	N
Tensile strength:				
Pure gum	1	1	4	4
Reinforcing loading	1	2	1	1
Tensile strength nonreinforcing loading	2	1	4	4
Elongation	2	1	2	2
Extensibility under mild stress	2	1	3	3
Rebound:				
Room temperature	1	4	1	2
100° C	1	1	1	1
Abrasion resistance:				
Unloaded	4	4	4	4
Optimum carbon black	2	1	1	1
Flex resistance of tread stock, 25° C	2	1	1	1
Electrical properties:				
Dry	1	1	4	4
Wet	3	1	4	4
Molding properties	1	1	1	1
Calendering properties	1	1	2	2
Vulcanization rate at high temperatures	1	2	1	1
Compression set 70° C	1	1	1	1
Tear resistance black loaded	1	1	1	1
Accelerator choice	1	3	1	1
Water absorption	1	1	1	1
Discoloration of age-resistant stocks	4	1	4	4
Resistance:				
To prevulcanization	3	1	4	4
To overvulcanization	3	1	1	1
Chemical resistance:				
Mineral acids	4	1	4	4
Ozone	4	1	4	4
Chlorine	4	4	4	4
Resistance to oxidation:				
70° bomb	3	1	1	1
70° oven	3	1	1	1
100° oven	3	1	1	1
Solvent resistance:				
Hydrocarbons	4	4	4	1
Alcohols	1	1	1	1
Ethers, esters	4	1	4	4
Chlorohydrocarbons, general	4	3	4	4
Ethylene dichloride	4	1	4	4
Sunlight resistance: Black stocks	3	2	(?)	1
Price	1	1	4	4

NOTE.—1, excellent; 2, good; 3, fair; 4, poor.

POTENTIAL USES FOR BUTYL, 1939

Per K. Frolich, director of the chemical laboratories, prepared the following memorandum for Murphree, director of the general Esso laboratories:

"Information given to Mr. Murphree—October 17, 1939

"Question: What is the current consumption of crude rubber in (a) fields where we believe butyl rubber to have a definite advantage, and (b) where we suspect or hope that it will have an advantage; assuming in each case that butyl rubber will be available at some such cost as 30–40 cents per pound as compared with natural rubber at 15–20 cents per pound?

"Answer: Data based on 1937 and mostly 1938 figures.

Digitized by Google

Uses	Pounds per year (a)	Pounds per year (b)
Cable insulation	13,000,000	
Miscellaneous tubing	10,000,000	13,000,000
Tank car lining	(1)	
Packing, washers, gaskets	5,000,000	5,000,000
Inner tubes		100,000,000
Tire curing bags	8,000,000	
Coated fabric	5,000,000	5,000,000
Mechanical goods	50,000,000	50,000,000
Flooring	1,000,000	1,000,000
Sponge		10,000,000
Druggists sundries	5,000,000	5,000,000
Total	97,000,000	189,000,000

[1] No data.

"Mechanical goods include: Hose, belting, gloves, automobile accessories, etc.

"Where one group covers a variety of items falling in both classes, the overall figure has been split accordingly.

"Inner tubes are on the border line and a more optimistic view would be to put it in the (a) column. Even 10% of the inner tube business would amount to 10,000,000 pounds per year.

"The tire industry proper takes close to 1,000,000,000 pounds per year. The total U. S. import of crude rubber in 1937 amounted to some 1,300,000,000.

"PER K. FROLICH,
"Chemical Laboratories.

"PKF: hf
"c.c.: Messrs. E. V. Murphree, H. W. Fisher, W. J. Sparks, I. E. Lightbown."

This memorandum was noted by Hopkins October 18, 1939, the day before the conference which he, Howard, and Frolich had with the Munitions Board, referred to in part 1 (exhibit 157).

RELATIVE ADVANTAGES OF BUNA S AND BUTYL

On October 20, 1939, the day following the conference with the Munitions Board, Hopkins summarized the relative advantages of Buna S and butyl for a "rush development."

"For Buna S—

"(a) the knowledge that Germany is using the product for tires, and slight element of doubt that butyl rubber will be suitable;
"(b) the tests by U. S. tire manufacturers put the Buna S ahead of butyl rubber.[1]

"Against Buna S is—

"(a) higher cost;
"(b) raw materials more difficult to supply;
"(c) longer period of time would be required to develop the art of producing and just as long a time to develop the art of compounding for tires;
"(d) other things being equal, American development is to be preferred.

"As you know, butyl rubber is going into the pilot plant stage and plans are being made to study the Buna N process in the laboratory. This work must be carried further before it is possible to plan further ahead and make a choice between the two methods of further development. I recommend that the project continue along exactly the same lines as have now been laid out until the suitability of butyl rubber for tires can be determined. I believe, however, that the whole synthetic rubber effort could be accelerated by an increase in technical personnel to carry it along. There is undoubtedly in each department a shortage of men to advance the project as rapidly as is justified by its promising possibilities. The time is so very ripe for a replacement of natural rubber by synthetic rubber in the United States as to make the cost of such an increase insig-

[1] This statement is incomprehensible. Hopkins knew that no tire manufacturer had ever been given so much as a sample of butyl rubber. The first samples were given to tire companies in June 1940, 8 months after this letter was written.

Digitized by Google

nificant in comparison with the importance of getting on a commercial basis ahead of the others who are known to be working in the field" (exhibit 157-A).

On November 6, 1939, Howard prepared a memorandum setting forth the situation with relation to buna in the United States. The last paragraph discusses butyl and is as follows:

"Our own butyl rubber development is being pushed aggressively in our own laboratories, but without outside cooperation up to this time. *The only outside contact we have had on butyl rubber has been with the Munitions Board,* through whom we have had contact with the technicians of the Army and Navy concerning special uses of butyl rubber in munitions. There is a considerable temptation to publicize this butyl rubber development and to seek contact with the rubber companies on it immediately, but a sounder policy apparently is to confine the development to our own organization up to the point of standardized operation of our pilot plant about next January or February. *This will give us an opportunity to feel out the whole synthetic rubber situation in the United States with the du Pont Company and the four leading American rubber manufacturers through our contacts with them on the Buna matter. The additional time is also desirable from a patent standpoint*" (exhibit 158).

With reference to the Army and Navy technicians more will be said later. On January 16, 1940, I. E. Lightbown of Standard's chemical laboratories prepared a chart showing comparison of rubber and butyl rubber. It is as follows (exhibit 159):

Comparison of rubber and Butyl rubber

	Rubber	Butyl rubber
A. CHARACTER		
1. Aging	Fair	Excellent.
2. Electrical properties	Good	Do.
3. Pure gum tensile	Excellent	Do.
4. Tensile of stocks with3 carbon-black leading	do	Fair.
5. Tensile of stocks with other leadings	do	Excellent.
6. Flex resistance	Good	Do.
7. Abrasion resistance	do	Do.
8. Impermeability to gases	Fair	Do.
9. H^2O resistance	do	Do.
10. Vibration damping	Good	Superior to rubber.
11. Heat build-up	do	Doubtful, perhaps higher than rubber.
12. Acid resistance	Poor	Excellent.
13. Oil resistance	do	Poor.
14. Resistance to other solvents	Variable	Variable. (Better in bensol).
15. Elongation	About 700 to 800 percent.	About 900 to 1,000 percent.
16. Sunlight resistance	Fair	Poor unless 30 percent or more carbon black added.
17. Curing rate	Fast	Slow.
18. Compression set	Good	About same as rubber.
B. PROCESSING		
1. Time of break-down	15 to 60 minutes	None required.
2. Scorchiness. (Danger of prevulcanization.)	High in some stocks	Probably none.
3. Ease of flow in mold	Excellent	Excellent.
4. Calendering	do	Probably difficult.
5. Tubing	do	Probably fair to good.
6. Hot tear resistance	Good	Excellent.
C. GENERAL		
1. Variety of applications	Very wide	Probably as wide as for rubber.
2. Odor	Characteristic	Odorless.

The Chemical Warfare Service had contacted the Acushnet Process Co., of New Bedford, Mass., concerning the possible use of butyl, and other synthetic rubbers, for gas masks. The results of tests convinced the Acushnet people that butyl was an exceptional material and caused the letter found in exhibit 160 to be written by Philip T. Gidley, their chemical and development engineer, to Frolich on December 16, 1939. The letter sets out the factors which give butyl rubber competitive advantages over natural rubber and other synthetics and asks to be allowed to participate in a cooperative program of developing butyl.

Digitized by Google

THE THREAT OF BUTYL TO FORCE THE RUBBER COMPANIES INTO LINE ON BUNA

Negotiations with the "Big Four" rubber companies with respect to participation in a Standard-dominated synthetic rubber program, had been going on in the fall of 1939 and the following winter. In March 1940, Firestone agreed to take the buna license on substantially the terms prescribed by Standard. In reporting this fact to the executive committee in a letter dated March 7, 1940, to A. C. Minton, the secretary, Howard, stated:

"I believe we are far enough advanced with our butyl rubber development so that we could now bring this into the discussions. Although our natural course would be to hold off some time longer on any disclosure of butyl rubber.

"I should like to come to the committee on Friday morning to obtain advice on the foregoing matters. And it may be that you will wish to circulate this memorandum in advance of the meeting" (exhibit 103).

On May 7, 1940, the Acushnet Process Co. prepared an elaborate chart showing comparative properties of elastemers. Those materials tested were rubber, Perbunan (Buna N) Neoprine, butyl rubber, Thiokol and Polyvinyl chloride. There are 48 different properties with respect to which the various materials are rated. Butyl is not oil resistant and the tests involving subjection to oil, hot oil and gasoline clearly show this. Aside from those tests butyl was found to be equal to or superior to rubber in nearly every respect and on an over-all basis to be superior to the other synthetic rubbers (exhibit 161).

On May 27, 1940, Hopkins and Frolich called upon the Munitions Board and as a result of their talk, Colonel Hines of the Board wrote Howard urging tests of X product (butyl) for tires. In a letter of May 29, 1940, Hopkins reports on this conference to Howard. His letter contains these statements:

"Col. Hines said that as soon as information became available indicating that the butyl rubber was suitable for tire manufacture, he thought it quite probable that his Board would recommend that federal funds which are being made available to the President be used to advance the time when substantial quantities of butyl rubber can be produced.

"Col. Hines and Capt. Heiss explained that the interest in rubber from a national defense standpoint was not limited to the requirements of the Army and Navy. These requirements are relatively insignificant. The Board recognizes, however, that a shortage of rubber would seriously handicap industrial mobilization. A large proportion of labor goes to work in automobiles and other rubber-tired vehicles.

"Col. Hines will write to you to emphasize the importance of having the butyl rubber tested for tire purposes as quickly as possible. It is suggested that as soon as this letter is received, you call a meeting to determine what should be done" (exhibit 162).

BUTYL IS PUBLICLY ANNOUNCED

On June 3, 1940, exactly a year after ter Meer's letter of June 3, 1939, expressing willingness that Standard should contact rubber goods manufacturers for tests, Howard contacted Mr. Trainer, an official of Firestone. On June 4, 1940, Howard wrote Mr. J. W. Thomas, president of Firestone, as follows:

"*This will confirm our telephone conversation yesterday*, and my subsequent conversation with Mr. Trainer. We are looking forward with pleasure to a visit of your gentlemen with us here on Thursday. I enclose text of the statement which Mr. Farish made at the Standard Oil Company (New Jersey) stockholders' meeting today. It is difficult to tell what the newspapers will do to it, but at any rate, this is all we are responsible for. You will note that I followed Mr. Trainer's suggestion by asking Mr. Farish in this statement to refer to the existing cooperation between Firestone and ourselves.

"From the standpoint of very large production within the shortest possible time, Butyl rubber is especially important. Not only as a commercial matter, but because of its bearing on the national supply problems, we ought therefore to move as rapidly as we possibly can in the experimental application of Butyl rubber in tire manufacture. In view of this, we hope to avoid the necessity for negotiation of any formal contracts between your company and ours and proceed to cooperate on the simplest possible basis, confirmed only by letter following the visit of your people.

"I very much appreciate your prompt action in arranging for the first visit and discussion" (exhibit 163).

Digitized by Google

On June 4, 1940, W. S. Farish, president of Standard, announced butyl rubber to the stockholders and thus to the world. This announcement beat Goodrich by 1 day with its public announcement of its own synthetic rubber called Ameripol. Farish said:

"You may also be interested to know that our Standard Oil Development Company has discovered in its own research laboratories another synthetic rubber product which we call Butyl Rubber. The Butyl Rubber is made from petroleum by processes more direct and simple than those required for the production of Buna rubber, and should be appreciably lower in cost. The German product was originally produced from limestone and coal, which were the cheap raw materials for Germany, and while in our own Buna Plant now building at Baton Rouge it will be produced from oil, the process involves several steps. The Butyl Rubber is now nearly a straight petroleum product and although its manufacture involves the most advanced technology, we have solved successfully the primary production problems and already have in operation a semicommercial pilot plant at our own Esso Laboratories in Bayway.

* * * * * * *

"The Butyl Rubber has, however, special properties of its own which make it superior to natural rubber for many uses.

"As in the case of the Buna rubber, the commercial development of the Butyl rubber will be in stages, the first stage being the manufacture of relatively small quantities for the specialty market and for commercial testing in tire production. Should it become necessary for the United States to produce synthetic rubber in substitution for a major proportion of imported natural rubber, we are in a position to manufacture the Butyl Rubber from petroleum in any required quantities as rapidly as the necessary plant facilities can be installed" (exhibit 104).

Two days later Standard caused to be prepared cost compilations for Buna S and for butyl rubber. It was computed that a plant to produce 100 tons of Buna S per day would require an investment of $20,700,000 as against an investment of less than one-half that amount or $9,800,000 for the same quantity of butyl rubber. A 300-ton per day Buna S plant would require an investment of $49,600,000 as against $23,800,000 or slightly less than 48 percent as much for the same size butyl plant. The actual production cost of Buna S was computed at 16.0 cents per pound in the 100-ton day Buna S plant as against 7.5 cents per pound in the same size butyl plant. In the 300-ton day Buna S plant, the production cost would be 14.4 cents per pound as against 6.6 cents per pound in the same size butyl plant. The butyl production cost would be less than 46 percent of the Buna S cost (exhibit 163A).

On the strength of the public announcement of butyl, United States Rubber decided to come in with Standard on its synthetic rubber program. It accepted the objectionable buna license and was given the privilege also extended to Firestone, the other buna licensee, of participating in the testing of butyl.

STANDARD PUBLICIZES SOME OF THE COST FIGURES FOR THE BENEFIT OF THE RUBBER INDUSTRY

With a letter to A. L. Viles, president of the Rubber Manufacturers Association, on June 10, 1940, Hopkins sent a memorandum describing Standard's buna and butyl developments. After describing the two in rather glowing terms, he states:

"Jersey has raw material available in one location, which is believed to be the lowest cost location, to make either 500 tons per day of Butyl rubber or 300 tons per day of Buna rubber. A highly preliminary estimate of the cost of building a plant to produce 300 tons per day of Buna is $50,000,000. The corresponding cost of a plant to produce 300 tons per day of Butyl rubber is $25,000,000. In both cases these figures include the cost of plant to make the raw materials but no item to cover the cost of land upon which to construct the equipment. In each case the cost of that part of the plant for producing the raw materials is a little more than half of the total. It seems probable that substantial additional quantities could be produced in large plants at one or more other locations with an investment which is slightly higher per unit of product than the above figures. To take care of the entire rubber supply of the country it might be necessary to resort to the more expensive plants and to more expensive processes for some portion of the total production.

Digitized by Google

"An estimate has been made of the time required for the construction of either a Butyl or Buna plant. It would require 1½ to 2½ years, depending upon the quantity desired and the degree of priority of deliveries of construction materials.

"*Production costs.*—While initial operating costs may be relatively high due to lack of experience in operation on a very large scale, the production costs of Buna within a year or two after starting should not be higher than 20¢ per pound, exclusive of any return upon investment, profit, or royalty. The cost of the Butyl rubber is expected to be materially less than the cost of the Buna rubber.

"It should be emphasized that the figures used above are extremely hurried and should under no circumstances be used except as rough approximations" (exhibit 164).

As has been shown, the Munitions Board in emphatic language urged Standard to test butyl rubber for tires as quickly as possible. This was in the letter of May 27, 1940, from Colonel Hines to Howard. Attention is again called to Hopkins' letter to Howard of May 29, 1940, in which he reports the substance of the meeting with the Munitions Board which prompted Colonel Hines to write his letter of May 27. Hopkins says:

"Col. Hines and Capt. Heiss explained that the interest in rubber from a national defense standpoint was not limited to the requirements of the Army and Navy. These requirements are relatively insignificant. The Board recognizes, however, that a shortage of rubber would seriously handicap industrial mobilization. A large proportion of labor goes to work in automobiles and other rubber-tired vehicles" (exhibit 162).

On May 31, 1940, Howard replied to Colonel Hines as follows (exhibit 165):

"I acknowledge with thanks your letter of May 27.

"We are in entire agreement with your conclusions, and you may rely upon us to act at once to determine the suitability of our 'X' Product in the manufacture of tires.

"With best regards, and the hope that I shall have the pleasure of being able to report progress to you on this matter very soon, I remain

"Very truly yours,

"_____ _____."

On June 11, 1940, Howard wrote E. R. Stettinius, Jr., Chairman of the Advisory Commission to the Council for National Defense. The parts of this letter which propose a revamping of the antitrust laws to permit the type of monopoly Standard desires to create in the rubber field have already been quoted. The opening paragraphs of this letter are as follows:

"We have already furnished to you through Mr. A. L. Viles the statistical data which you have requested on synthetic-rubber production, which data we understood from Mr. Viles you were endeavoring to coordinate with all other available information for the purpose of determining the national position and policy on rubber. *Apparently we have a rather exceptional measure of responsibility in this matter* and for that reason we are supplementing the information given you through Mr. Viles with a more general statement of the synthetic-rubber problem as it appears to us.

"Our responsibility in the matter arises from the fact that we own the American rights for the German Buna synthetic rubber, that we have a second synthetic rubber of our own development, Butyl Rubber (which it seems possible may meet American conditions even better than the Buna rubber), and that some of our affiliated companies have the largest, lowest-cost supplies of raw material for the manufacture of these two rubbers and probably also for the recently announced Goodrich synthetic rubber which (according to our information) is itself a variant of the German Buna rubber" (exhibit 111).

This is a clear-cut recognition of the peculiar responsibility which Standard Oil Co. of New Jersey had with regard to the rubber (synthetic rubber) situation in this country. How this company measured up to that great responsibility is demonstrated in the following description of the tire and tube tests of butyl rubber.

STANDARD COMMENCES TIRE-TESTING PROGRAM

The two tire companies to be given samples of butyl for testing in June 1940 were Firestone and United States Rubber. These were the two companies which had accepted the objectionable form of license for buna. No other tire company ever received a sample of butyl prior to February 1942.

Digitized by Google

The tires made by these two companies from butyl were made in the period from June 1940 to November 1940. The butyl supplied for tire testing is entirely covered in the technical committee report dated April 14, 1941, pages 28 and 29 of which are found in exhibit 166. Mr. Howard testified on April 2 before the Truman committee that it required 1,000 pounds to run a satisfactory test for tires (exhibit 145). By this standard, exactly one test could have been made by each of the two companies. Each company received as much as 1,000 pounds of only one type of butyl, viz type A.

UNITED STATES RUBBER'S TIRE TESTS

Type A was the original type of butyl made of isobutylene and butadiene. From the quantity which United States Rubber Co. received for tire-testing purposes, it constructed 34 tires, only 14 of which were tested. The other 20 were used for exhibition purposes only (exhibit 167). These were found to be approximately half as good as natural rubber tires, although the tests were recognized as being unfair to the real qualities of butyl because of inadequate experience in making tires of it. Frolich reported to Hopkins on August 22, 1940, concerning these first tires:

"Dr. Gerke sounded quite optimistic concerning the possibility of making further progress. He said that they expected to be able to make improvements both with respect to tread wear and carcass life now that they had developed a basic technique for constructing tires from butyl rubber. We are supplying him with stock made with 2% piperylene which we hope will work in the direction of improved carcass life. However, I think that we will have to count on the U. S. Rubber people's experience in compounding to help improve tread wear" (exhibit 168).

No tires were made by United States Rubber of the isobutylene-piperylene stock just mentioned. On September 19, 1940, Frolich wrote Dr. W. A. Gibbons, United States Rubber Co., Passaic, N. J., concerning a new D–4 stock. This was an isobutylene-dimethylbutadiene stock. No disclosure was ever made to United States Rubber or Firestone as to the nature of the raw materials which were used in the butyl rubber which they were testing. The symbols A, B–1, B–2, C–2, and D–4 were used in all communications. Mr. Farish stated before the Truman Committee:

"Gradually through modifying the manufacturing and compounding procedure it was possible to build Butyl rubber tires which give longer service" (exhibit 145).

The fact is that less than 1 month after the report of August 22, 1940, of the tests of the first type A material, Standard had already developed two new types, C and D, each of which represented a great improvement over type A.

STANDARD IN SEPTEMBER 1940 DEVELOPED GREATLY IMPROVED BUTYL

In his letter to Gibbons of September 19, 1940, Frolich said:

"We are now ready to supply you with experimental quantities of our new D–4 stock. *This material in many respects represents such a complete departure from the butyl rubber on which you have been working that we intend to supply you with rather detailed information on its compounding, calendering and curing characteristics.* As a matter of fact, we have actually delayed sending you samples in order to give us time to accumulate more complete information on the 'D' product. We have considered it desirable to take this precaution because circumstances over which we have no control make it rather unlikely that we will be able to supply you with more than about 100 lbs. of this D–4 stock for several months to come" (exhibit 169).

On September 20, 1940, I. E. Lightbown of Esso Laboratories wrote Gibbons of United States Rubber:

"We are enclosing some of our most recent data on our new D–4 butyl rubber. I believe Dr. Frolich spoke of this in his letter of September 19. *All things considered, it looks much better for tire use than anything we have made previously.* * * * Butyl rubber Type D–4 is much better than any of the 'A' stock as a tire material" (exhibit 170).

September 23, 1940, Frolich wrote J. R. Brown, Jr., of Esso Laboratories:

"The Passaic people (U. S. Rubber) are now studying our D–4 (dimethylbutadiene stock) data, and will phone us later in the week to arrange for some of us to get together with them in order to lay out a program of work on this ma-

Digitized by Google

terial. Dr. Gerke said that it looked most interesting to them on the basis of the data which we have supplied" (exhibit 171).

From the 100 pounds of D–4 material which United States Rubber received in September 1940, it made 2 test tires. I. E. Lightbown, of Standard, reported November 19, 1940, on a visit to United States Rubber November 11, 1940. His report (exhibit 172) states that the United States Rubber people had used the same process in compounding and manufacturing the 2 tires as that employed in the 25 or 30 made previously of type A.

"They realized that the compound used is probably not the best but they did not feel that they had enough D–4 polymer to pursue the necessary compounding investigation."

In some respects these two tires were much superior to those previously made.

"Dr. Cuthbertson said that if we could make as much improvement over D–4 as we had made by D–4 over Type A he believed it to be not impossible that such a stock would be suitable for natural rubber replacement."

From a representative of a company which had at the time a $20,000,000 investment in natural rubber plantations, by far the largest of any such investment by any American rubber company, this statement is most significant. It is even more significant from a company controlled by du Pont with its rival synthetic rubber Neoprene. From November 1940 until within the last few weeks, not another tire has been made of butyl rubber by the United States Rubber Co.

FIRESTONE'S TESTS

The Firestone Tire & Rubber Co. in June and July 1940 received a quantity of type A butyl rubber for testing in tires. It made a half dozen tires of this material, chiefly to get experience in actually making the tires. I. E. Lightbown, of Standard, reported July 9, 1940, on a visit to the United States Rubber and Firestone plants. He states:

"As has been said, the Firestone Company were extremely anxious to make a representative butyl rubber tire as soon as possible. Their idea was to make a tire first, then work toward quality from this point" (exhibit 173).

Ninety pounds of C–2 material were sent to Firestone, from which three tires were made. Only two were tested on a car. September 20, 1940, J. E. Trainer, vice president of Firestone, wrote Howard:

"You will be pleased to know that we have completed the road tests on the tires made with the XC–2 polymer and that the results show a decided improvement over the tires made with the original Butyl rubber. The conditions of the test were 28 pounds inflation, 915 pounds load, 45 miles-per-hour speed on pavement and 35 miles per hour speed on gravel road. Although this polymer represents an outstanding improvement over the original Butyl rubber which we tested, there still remains much to be done" (exhibit 174).

On the same day, September 20, 1940, Lightbown sent Dr. J. N. Street, of Firestone, data on the new D–4 butyl rubber (exhibit 175). On October 2, 1940, Lightbown wrote Frolich to report on a meeting with Street September 27, 1940, with regard to their butyl rubber tire testing program:

"The Firestone Company has experienced much more satisfactory results with the C–2 than with the original butyl rubber type A stock. Under similar conditions of operation in Texas two butyl rubber tires made from type C–2 polymer lasted 2,300 miles and 4,700 miles, respectively, in comparison with 200 miles for type A stock. Dr. Street said that these tires had been sent to Texas on a 'blind' test so that direct comparison could be made without favoring either the butyl rubber or the natural rubber control. During the testing operation the unsolicited comment from Texas has been that after a day's run the tires were too hot to handle. This probably would account for their failure, which was ply separation, since the exceedingly high temperatures experienced would cause a parting between the butyl rubber and the fabric. Firestone's indoor test wheel had pretty well checked the experience of actual operation in Texas. The butyl rubber type A had failed after 66 miles on the indoor wheel at 45 m. p. h. The C–2 tire had been run at the same speed for 600 miles without any failure, although the latter tire was running at the end of the test at 170° F. for natural rubber (exhibit 176).

Although 100 pounds of D–4 material were sent Firestone prior to April 1941, no tires were ever made of that material. Standard did not urge it, basing its decision not to do so upon the failure of United States Rubber D–4 tire (exhibit

Digitized by Google

177). A few days after the decision was made Standard learned more about the United States tire failure. November 25, 1940, Frolich wrote Murphree:

"As mentioned to you over the telephone, Dr. Gerke (United States Rubber) called me this morning and said that they had called me this morning and said that they had received further details in regard to the Phoenix road test which made them feel that our D–4 stock (butyl rubber made with 4% dimethyl butadiene in the feed) could not be held responsible for its previously reported tire failure. According to Dr. Gerke this test tire failed after 2,463 miles due to "rupture" which means that it was the cotton and not the rubber that gave way. The resistance of the D–4 tread to wear was estimated to be 59% of a first-line rubber tire. Although this value should only be considered accurate to within 10% it nevertheless indicates some improvement over the original tires made from 'a' stock (butadiene copolymer) whose resistence to wear were reported as being closer to 50% or less as compared with natural rubber" (exhibit 178).

In connection with this report that it was the cotton cord which failed due to the heat and not the butyl rubber it is interesting to note the contents of this memorandum of May 3, 1940, just a few months before these tire tests. It is written by M. B. Hopkins to P. K. Frolich and is as follows:

"The following is quoted from a News Bulletin of the National Farm Chemurgic Council. I have underscored words which may be of particular interest in connection with butyl rubber.

"*80,000-Mile Tire of Rayon.*—A rayon cord tire which is 3,000 per cent sturdier than standard cotton, has a higher tensile strength than structural steel, and ran 80,000 miles under conditions which destroyed an ordinary tire in 3,000 miles was recently described at the 99th meeting of the American Chemical Society.

"William H. Bradshaw, director of rayon research for E. I. du Pont de Nemours & Co., said a new rayon developed specifically for tires has produced "astounding results" in road tests involving millions of miles.

"The secret of its strength is its *ability to maintain strength in high temperatures*, being as safe from blowouts at 105 degrees as the ordinary cotton-cord tire is at 75 degrees, according to Mr. Bradshaw" (exhibit 179).

No rayon cord tire has ever been made of butyl rubber although both Firestone and United States Rubber use rayon in all their heavy-duty tires. The difference in cost of cotton and rayon on a tire of the size 8.25–20 is only 35 cents taking cotton at 17 cents per pound and rayon at 45 cents per pound. Since less rubber (at 22.5 cents per pound) is used with rayon cords than with cotton cords, the rayon cord tire of this size actually costs 85 cents less than the cotton cord tire (exhibit 180).

When the short tire-testing program extending from August to November 1940 had been nearly completed Standard made a contract with the United Carbon Co. to develop proper carbon black for use with butyl rubber. The contract was made in November and the tire-testing program had been completed before anything came of the United Carbon Co.'s work. On April 23, 1941, Frolich wrote Murphree concerning United Carbon:

"As outlined in a previous report to you, these people are making a rather comprehensive study of the effect of various types of carbon black on butyl rubber. By and large, their observations on the physical properties of such compounds check our own. *They have recently developed a new black which seems to go particularly well with butyl.* By way of illustration, they have found that this particular material will increase the extrusion rate of butyl about 100% as compared with other commonly used blacks" (exhibit 181).

Firestone concentrated on the problem of adhering a butyl D–4 tread to a natural rubber fire carcass (exhibit 182, p. 19, from the report to the Technical Committee of Standard Development dated April 14, 1941). Nothing in the Standard files shows the results of this work. Dr. Street told this witness that they felt confident they had solved the problem.

Before the Truman committe Mr. Farish stated:

"Early efforts to make a Butyl rubber tire were discouraging. The first Butyl rubber tread vulcanized on a natural rubber carcass separated after running only 17 miles (exhibit 145).

This is a commentary on the tire-making ability of the chemists in a small chemical laboratory of an oil refinery, but is meaningless as to the actual qualities of butyl rubber. He continued:

"The rubber companies were from the beginning able to do much better than this with a tire made entirely of Butyl rubber. Their first tires ran several hundred miles before going to pieces."

Digitized by Google

But the first tire made by United States Rubber Co. of butyl rubber was still running on their mail truck after 1,600 miles, still in good condition and was removed after 4,000 miles having worn down about twice as fast as the natural rubber control (exhibit 182–A). The first tire made by Firestone was exhibited to the Standard executive committee by Howard after running 2,500 miles and then showing 10 percent more wear than natural rubber tires (exhibit 182–B). Farish continued:

"Gradually through modifying the manufacturing and compounding procedure it was possible to build Butyl rubber tires which gave longer service. At the present time the rubber companies know how to make Butyl rubber tires which will last as long as 10,000 miles when used on passenger cars which are operated at less than 35 miles per hour. It required months of work after June 1940 to arrive at this partial solution of the problem."

This sentence would seem to convey the impression that, beginning in June 1940, the rubber companies had been working continuously on a very arduous program of testing tires and making improvements as a result of the tests.

To summarize in a few sentences: In June 1940, Standard gave Firestone and United States Rubber the minimum quantity of type A butyl rubber for making tires to be tested. Firestone made a half dozen tires and United States Rubber 30 or 34, only 14 of which were tested. The conclusion reached by both was that this type of butyl would make tires roughly half as good as natural rubber. These tests had been made before the end of August 1940.

In September, Standard furnished both companies with small quantites (entirely inadequate for tire testing, according to Howard's testimony before the Truman committee) of two improved types of butyl rubber. Firestone made three tires of type C. Only two of the tires were tested on the car. They were found to represent a great improvement over those originally made of type A. Firestone never made tires of type D.

United States Rubber made two tries of type D, only one of which was tested on a car. It was found to be a great improvement over type A. United States Rubber never made tires of type C.

These tests had been completed before November 11, 1940. No tire has ever been made of butyl rubber by either company since that time, until within the last few weeks. Insofar as any actual tire-making experience is concerned, the rubber companies knew as much about making butyl-rubber tires in November 1940 as they do today. It is possible that tests made within the last few weeks, not reflected in the Standard files when examined, and not shown in the reports of the two rubber companies recently furnished the Truman committee, would shed additional light.

BUTYL INNER TUBES

In his statement before the Truman committee, Farish said:

"The rubber companies had trouble also in making Butyl rubber tire inner tubes. They had trouble adhering the valve to the tube and also with splicing the tube itself. There is promise that these problems are nearly solved" (exhibit 145).

He failed to state that as early as December 1940, Firestone was making inner tube of butyl rubber (exhibit 183) and that prior to January 21, 1941, they had found these tubes to be greatly superior to natural-rubber tubes, particularly with regard to holding air (exhibit 184).

"In two comparative tests the pressure of natural rubber inner tubes dropped from 85 to 40 lbs. 1 sq. in. while the inner tubes of Butyl rubber for the same period dropped no measurable amount in pressure."

When Mr. Farish made this statement to the committee, he must have known that Harvey S. Firestone had reported to Office of Production Management on January 9, 1942, that "butyl-rubber experimental work is rather meager because of insufficient time and quantity of materials, but in their [Firestone's] opinion the product is *satisfactory for 100 percent of tube requirements*, and possesses real advantages over any other product in this service, although there are also some disadvantages. They also report it as satisfactory and better than other products for barrage balloons and capable of being substituted for natural rubber in general on coated fabrics" (exhibit 185).

It should not be concluded that this belief in the usefulness of butyl is one only recently acquired. As early as October 1940 Firestone predicted a possible market for butyl outside of tire manufacture equivalent to 104,400 long tons of natural rubber per year (exhibit 186).

Digitized by Google

Other Testing of Butyl

The results of testing butyl by a company which was genuinely interested in ascertaining its possibilities, and in demonstrating them, are reflected in the reports of the Acushnet Process Co., of New Bedford, Mass. It will be recalled that this company had not been selected by Standard but by the Chemical Warfare Service. It became a participant in the testing of butyl and other materials for use in gas masks. It found butyl to be superior to rubber and other synthetic materials for this purpose and became enthusiastic concerning its other possibilities. At its request it was given a right to test butyl and experiment with compounding it.

On November 22, 1940, P. K. Frolich wrote Murphree as follows:

"I am attaching some notes on a telephone conversation I had with Mr. Gidley of Acushnet.

"You may find these of interest for Mr. Gidley is still the most enthusiastic booster we have for butyl rubber in the mechanical and specialty goods field" (exhibit 187).

The first part of the memorandum deals with Acushnet's experiments with butyl for gas masks. The remainder of the memorandum is as follows:

"Acushnet is carrying out extensive tests to evaluate butyl rubber for various industrial uses. One of their contracts is with a rayon company operating the Viscose process, and tests are now in progress to use our product as a surface coating material or as a material of construction in various operations that involve the handling of corrosive materials. The results to date were reported as 'very hopeful' with respect to resistance to spinning, coagulating, and rinsing solutions involving the use of hot dilute sulfuric acid, sodium sulfite, and caustic.

"There are also several places in the sulfate paper-pulp process which require resistance to corrosive chemicals but not to solvents. Acushnet is working on some of these problems. One of them includes the replacement of butyl rubber-coated steel for Hastelloy in equipment for handling a bleaching solution of high chlorine content. This test is just getting under way, but the application was said to 'look quite interesting on the basis of laboratory results.'

"The experience gained so far with the above two industries has made Mr. Gidley interested in the general subject of developing corrosion-resistant coatings. He thinks butyl rubber offers particular promise in this direction and that we might well devote some of our efforts to this field, considering 'that millions of gallons of special resistant coating materials are sold every year.' In this connection it may be mentioned that we at one time did sufficient work on a butyl rubber paint or coating composition to enable us to file a patent application along these lines.

"I also talked to Mr. Gidley about the question of adhering sheets of butyl rubber to metal. In the case of natural rubber this is quite an art, and some people, such as Goodrich with their Vulcalox process, have been rather successful in developing methods of adhering linings for tank cars and the like. Our own work on adhering butyl rubber to metal has not been particularly successful but we had understood that Acushnet had solved the problem by some modification of their standard rubber technique. It developed from our conversation that Acushnet's process depends upon a special treatment of the metal surface rather than upon the use of a bonding cement. However, they have not obtained any patent protection in this field because as a small company they have felt that they would be better off by keeping their knowledge secret. I told Mr. Gidley that under these circumstances we would prefer not to learn the details of their process as we would like to feel free to work on the problem with other rubber companies. However, I thought that it would be desirable for us to have them coat some pieces of metal for us to inspect and also to demonstrate to other interested parties. Aside from industrial uses which would be more important from the standpoint of volume, I have specifically in mind that it may be possible for us—on the basis of the results obtained in the tests carried out in cooperation with the Navy—to get butyl rubber accepted for lining of the acid-proof storage battery compartments in one or more of the new submarines" (exhibit 188).

On March 10, 1941, Hopkins wrote this memorandum to Howard and Russell:

"I believe you may be interested in reading the attached report of which Dr. Frolich did not send you a copy. Please notice particularly the marked paragraph at the bottom of page 2. The Acushnet people are attacking the problem

Digitized by Google

of utilizing butyl rubber in a much more promising way than the other cooperating companies. The General Electric and the rubber companies naturally want to use the same equipment for processing butyl rubber as is used for processing natural rubber. There is some tendency, particularly where the experiments are carried out by the operating forces as distinguished from the research people, to put butyl rubber aside in cases where it does not work in equipment designed to handle natural rubber" (exhibit 189).

The attached report is in the form of a letter from Frolich to Murphree dated March 5, 1941, and contains the following statements:

"Yesterday I had a long telephone conversation with Mr. Gidley, of the Acushnet Process Company, in order to be brought up to date on his recent activities on butyl rubber. As usual, Mr. Gidley had an interesting story to tell. Among the various companies with whom we are cooperating in this field, Acushnet is the only one that looks upon butyl rubber as an entirely new type of product and is approaching the problem of its utilization with this fact in mind.

"Due to 'Government red tape' Acushnet has not yet received a definite order for the trial lot of butyl gas-mask face blanks. However, because of the active interest in the problem on the part of General Baker and his staff, Acushnet is now going ahead with the manufacture of the masks in the hope that the order will eventually come through. As I recall it, this lot will amount to some 300 face blanks, for which we supplied 500 lbs. of butyl A quite some time ago.

"Acushnet has checked our observations on the resistance of butyl rubber to lactic acid and butterfat. Milking inflation tests are now being carried out in the field on several dozen pieces alongside of standard inflators made from natural rubber. The preliminary results were considered very satisfactory. Quoting Mr. Gidley: 'The most interesting thing about this development is that the cows seem to like the butyl inflators, * * * I knew you would laugh at this because I found it rather amusing myself when it was called to my attention. However, the fact is that butyl rubber has a peculiar feel, and its soft texture definitely results in less skin irritation.' (Apparently cows confirm the reaction of those of us who have had occasion to examine the butyl-rubber gas-mask face blanks.)

"Acushnet continues to be quite interested in the application of butyl rubber to the manufacture of druggists' sundries. Tests have been carried out on syringe bags and other articles that come in contact with disinfectants and sterilizers. In general, the butyl has been found to 'stand up much better than natural rubber' in this work. The main feature of butyl is that it does not show the characteristic tendency of natural rubber to crack on such repeated exposure to common disinfectants and sterilizers. It has also been noted that butyl seems to hold pigments without bleeding better than natural rubber. Mr. Gidley considered this a rather surprising result because it has always been taken for granted that bleeding is a characteristic of the pigment rather than of the rubber.

"The peculiar bloom of butyl rubber is objectionable for pastel colors. Mr. Gidley thought that this difficulty could be overcome if we would reduce the stearic acid content from the present 3% to 1%, or ⅓ of 1%. He felt that 1% of stearic acid should be considered about the limit for consumer rubber items, particularly when used without carbon black. Along this general line Acushnet is also working on nipples made from butyl rubber. Because of the content of pigment, i. e., zinc oxide introduced in the banburying of the stock with which they have been supplied in the past, they have not been able to meet the trade's requirement of a transparent or semi-transparent article. It was therefore agreed that we would supply Acushnet with a one-pound sample of uncompounded stock, although it would not be considered objectionable if we should prefer to introduce as much as ½ or 1% sulfur in this material as a stabilizer.

"Acushnet had approached the Navy Bureau in Washington with an offer to work on the adhesion of butyl rubber for the acid-proof lining of submarine storage-battery compartments. In return they had been requested to send in a bid for a regular submarine lining job. As Mr. Gidley felt that this was moving a bit too fast, the matter will be dropped here unless we should decide to contact the Navy in an effort to initiate a test program along such lines. (Because of the low curing temperatures ordinarily specified for this kind of a job, we are not in favor of pushing the matter further.)

"Acushnet has made considerable progress in the vulcanization of butyl rubber and has succeeded in reducing the curing time to 5 minutes at 300° F.

Digitized by Google

The product obtained has a satisfactory tensile strength and the 'permanent set is not bad—about 20%.' (This figure seems quite high to us and must refer to some special test rather than to the standard A. S. T. M. procedure.) In an attempt to speed up the cure Acushnet has devised a rather unique procedure which consists of impregnating very finely divided cotton linters or wood pulp (about 200 mesh) with calcium hypochlorite (ordinary bleaching powder) and milling this into the butyl rubber together with the regular compounding ingredients. The milling is carried out at high temperature which may contribute to the resulting fast cure" (exhibit 190).

SURVEY OF THE TESTING OF BUTYL RUBBER

The following facts stand out when one considers the testing and developing which have taken place with regard to butyl rubber. Considerable work has been done in the Esso laboratories down through the years. And yet it is the fact that the Standard Development Co. had no more than three technical employees working on this valuable development as recently as May 1941, 3 years after having given it to the Germans.

The one rubber product company which had been furnished samples of butyl (not having been selected by Standard) has been consistently enthusiastic and has accomplished more than the larger companies in mastering the art of utilizing butyl. An instance of this is found in the matter of adhering butyl to metal, a problem which continued to bother the tire companies long after Acushnet had solved it.

The two tire companies selected by Standard to test butyl for tires and tubes were those having the largest investments in natural rubber and the slightest experience and interest in working with synthetic rubber. One of the two companies, United States Rubber, is controlled by du Pont, which has its own synthetic rubber products selling under the name Neoprene, and which in recent years has been developing a new synthetic rubber which would be in competition with butyl and buna for tire and tube uses.

To summarize, Standard supplied both companies with approximately 1,000 pounds of the original type A butyl. Part of this was second-grade material and the remainder was recognized as being inferior to other types of butyl which were being developed. Each of the companies made a few tires of this material, attempting to use natural rubber technique so far as possible. The first tires were approximately half as good as natural rubber tires.

Small quantities of two improved types of butyl were supplied each company within a short time. Firestone made three tires of C–2 type material and found them to be an improvement over the original type A tires. United States Rubber made two tires out of D–4 material and found them to be an improvement over the original type A tires. The one tire made of this material actually tested on a car failed after 2,500 miles at 60 miles per hour as a result of rupture of the cotton cord and not because the butyl failed. With that tire test in November 1940 ended the testing of butyl rubber in tires.

As a result of these meager tests, United States Rubber informed Standard that tires which would give 55 to 65 percent of the service of first-line natural rubber tires if driven at speeds under 60 miles per hour could be made of butyl rubber. An important factor in the making of a tire is the carbon black used. Standard's program for developing suitable carbon black for use with butyl was not commenced until after the tire tests had ended. Although Standard and both rubber companies knew that the great problem was one of heat build-up and that rayon cords are superior in this connection no tire was made with rayon cord. Not only does the rayon itself withstand the heat far better than cotton, but it also permits the use of less rubber and in that way lessens the heat build-up.

In 1941 Standard found that a new vulcanizing agent when used with butyl rubber gives greatly improved results in laboratory tests with respect to the heat build-up in the finished product. No tire has even been made since this improvement in technique was developed, unless within the last few weeks.

One of the difficulties in connection with the whole testing program has been the unwillingness of Standard to pass on to one of the companies ideas or technique acquired from the other. As illustrative, Firestone could make good inner tubes of butyl superior to those mode of natural rubber nearly a year and a half ago and reported that fact to Standard in January 1941. United States Rubber

Digitized by Google

with all its experience and technical facilities still reports that the usable inner tube cannot be made of butyl rubber.

Standard has known for more than a year that Acushnet had quickly and successfully solved the problems of rapid vulcanization and adhering butyl to metal. There is no evidence that this knowledge was ever passed to the two rubber companies.

Firestone has recently solved the problem of making a butyl tread adhere to a natural rubber carcass. United States Rubber is still in the dark on this important phase of butyl development.

Even in connection with the buna program where Firestone and United States Rubber were both licensed to manufacture, and secrecy was not the watchword as in the case of butyl rubber, the inability to pass information from one to the other is found. In a letter of February 25, 1941, B. W. Vanderbilt of Development wrote W. E. Currie, vice president and patent attorney of Development, as follows:

"We are also constantly confronted with the problem of avoiding passing any information which we may receive from one of the companies on to the other. We believe that the possibility that such information may be passed on has made both Firestone and U. S. Rubber tend to be a little reluctant in discussing their Buna work with us" (exhibit 191).

In connection with butyl, Currie wrote Hopkins on March 24, 1941, as follows:

"Referring to your letter of March 19th, I believe the only practical way of getting advantage out of the cooperation with the rubber companies is to discuss inventions freely with them and secure advice on the filing of patent applications. *The only possible objection I see is that one of the rubber companies may feel that we are passing on to another information which should not be passed on. If we do the best we can to avoid this I should think there would be no objection to following out the procedure which you suggested in your letter of February 28th.*" (exhibit 192).

BUTYL COSTS

Standard's own computations show that butyl rubber can be made at a cost which is much lower than that of any other synthetic rubber, at approximately one-third the current cost of natural rubber.

The cost figures heretofore mentioned as having been prepared in June 1940 were discussed in the hearing before the Truman committee. Herewith is set forth every set of butyl cost figures which could be found in the Standard files. First are those in which Standard was figuring costs for itself. Later are those where the costs are being figured for the United States Government.

BUTYL COST ESTIMATES AS OF OCTOBER 20, 1939

(Exhibit 193)

10 Ton/Day Butyl Rubber Project, Bayway Summary of Investments

1. 10 T/CD Polymerization Plant, Paratone area, Total investment, on- and off-site	$800,000
2. 1.5 T/CD Butadiene Recovery and Purification Plant, Paratone area; Total investment on- and off-site	145,000
3. 30 T/CD Isobutylene Regeneration Plant, Chem. Prod. area; Supplying feed to both Polybutene and Butyl Rubber Plants; New investment only, on- and off-site	315,000
New Investment for Producing Isobutylene and Pure Gum Butyl Rubber, before Banbury treatment, storage or packaging	1,260,000
4. Product Handling Facilities, Paratone area; for Banbury treating, storing, packaging and shipping; New investment, on- and off-site	200,000
Total New Investment for Isobutylene and Butyl Rubber Projects	1,460,000
5. Existing Equipment Used for Isobutylene Absorption Unit; Dimer Plant equipment, Chem. Prods. area, used to absorb i-C_4H_8 for both Polybutene and Butyl Rubber Plants Original book value of equipment, before depreciation	[1] 240,000

[1] Polybutene and butyl rubber each take 50 percent of isobutylene produced. Consequently only 50 percent of items 3 and 5 are chargeable to butyl rubber project

Digitized by Google

Other Testing of Butyl

The results of testing butyl by a company which was genuinely interested in ascertaining its possibilities, and in demonstrating them, are reflected in the reports of the Acushnet Process Co., of New Bedford, Mass. It will be recalled that this company had not been selected by Standard but by the Chemical Warfare Service. It became a participant in the testing of butyl and other materials for use in gas masks. It found butyl to be superior to rubber and other synthetic materials for this purpose and became enthusiastic concerning its other possibilities. At its request it was given a right to test butyl and experiment with compounding it.

On November 22, 1940, P. K. Frolich wrote Murphree as follows:

"I am attaching some notes on a telephone conversation I had with Mr. Gidley of Acushnet.

"You may find these of interest for Mr. Gidley is still the most enthusiastic booster we have for butyl rubber in the mechanical and specialty goods field" (exhibit 187).

The first part of the memorandum deals with Acushnet's experiments with butyl for gas masks. The remainder of the memorandum is as follows:

"Acushnet is carrying out extensive tests to evaluate butyl rubber for various industrial uses. One of their contracts is with a rayon company operating the Viscose process, and tests are now in progress to use our product as a surface coating material or as a material of construction in various operations that involve the handling of corrosive materials. The results to date were reported as 'very hopeful' with respect to resistance to spinning, coagulating, and rinsing solutions involving the use of hot dilute sulfuric acid, sodium sulfite, and caustic.

"There are also several places in the sulfate paper-pulp process which require resistance to corrosive chemicals but not to solvents. Acushnet is working on some of these problems. One of them includes the replacement of butyl rubber-coated steel for Hastelloy in equipment for handling a bleaching solution of high chlorine content. This test is just getting under way, but the application was said to 'look quite interesting on the basis of laboratory results.'

"The experience gained so far with the above two industries has made Mr. Gidley interested in the general subject of developing corrosion-resistant coatings. He thinks butyl rubber offers particular promise in this direction and that we might well devote some of our efforts to this field, considering 'that millions of gallons of special resistant coating materials are sold every year.' In this connection it may be mentioned that we at one time did sufficient work on a butyl rubber paint or coating composition to enable us to file a patent application along these lines.

"I also talked to Mr. Gidley about the question of adhering sheets of butyl rubber to metal. In the case of natural rubber this is quite an art, and some people, such as Goodrich with their Vulcalox process, have been rather successful in developing methods of adhering linings for tank cars and the like. Our own work on adhering butyl rubber to metal has not been particularly successful but we had understood that Acushnet had solved the problem by some modification of their standard rubber technique. It developed from our conversation that Acushnet's process depends upon a special treatment of the metal surface rather than upon the use of a bonding cement. However, they have not obtained any patent protection in this field because as a small company they have felt that they would be better off by keeping their knowledge secret. I told Mr. Gidley that under these circumstances we would prefer not to learn the details of their process as we would like to feel free to work on the problem with other rubber companies. However, I thought that it would be desirable for us to have them coat some pieces of metal for us to inspect and also to demonstrate to other interested parties. Aside from industrial uses which would be more important from the standpoint of volume, I have specifically in mind that it may be possible for us—on the basis of the results obtained in the tests carried out in cooperation with the Navy—to get butyl rubber accepted for lining of the acid-proof storage battery compartments in one or more of the new submarines" (exhibit 188).

On March 10, 1941, Hopkins wrote this memorandum to Howard and Russell:

"I believe you may be interested in reading the attached report of which Dr. Frolich did not send you a copy. Please notice particularly the marked paragraph at the bottom of page 2. The Acushnet people are attacking the problem

Digitized by Google

of utilizing butyl rubber in a much more promising way than the other cooperating companies. The General Electric and the rubber companies naturally want to use the same equipment for processing butyl rubber as is used for processing natural rubber. There is some tendency, particularly where the experiments are carried out by the operating forces as distinguished from the research people, to put butyl rubber aside in cases where it does not work in equipment designed to handle natural rubber" (exhibit 189).

The attached report is in the form of a letter from Frolich to Murphree dated March 5, 1941, and contains the following statements:

"Yesterday I had a long telephone conversation with Mr. Gidley, of the Acushnet Process Company, in order to be brought up to date on his recent activities on butyl rubber. As usual, Mr. Gidley had an interesting story to tell. Among the various companies with whom we are cooperating in this field, Acushnet is the only one that looks upon butyl rubber as an entirely new type of product and is approaching the problem of its utilization with this fact in mind.

"Due to 'Government red tape' Acushnet has not yet received a definite order for the trial lot of butyl gas-mask face blanks. However, because of the active interest in the problem on the part of General Baker and his staff, Acushnet is now going ahead with the manufacture of the masks in the hope that the order will eventually come through. As I recall it, this lot will amount to some 300 face blanks, for which we supplied 500 lbs. of butyl A quite some time ago.

"Acushnet has checked our observations on the resistance of butyl rubber to lactic acid and butterfat. Milking inflation tests are now being carried out in the field on several dozen pieces alongside of standard inflators made from natural rubber. The preliminary results were considered very satisfactory. Quoting Mr. Gidley: 'The most interesting thing about this development is that the cows seem to like the butyl inflators, * * * I knew you would laugh at this because I found it rather amusing myself when it was called to my attention. However, the fact is that butyl rubber has a peculiar feel, and its soft texture definitely results in less skin irritation.' (Apparently cows confirm the reaction of those of us who have had occasion to examine the butyl-rubber gas-mask face blanks.)

"Acushnet continues to be quite interested in the application of butyl rubber to the manufacture of druggists' sundries. Tests have been carried out on syringe bags and other articles that come in contact with disinfectants and sterilizers. In general, the butyl has been found to 'stand up much better than natural rubber' in this work. The main feature of butyl is that it does not show the characteristic tendency of natural rubber to crack on such repeated exposure to common disinfectants and sterilizers. It has also been noted that butyl seems to hold pigments without bleeding better than natural rubber. Mr. Gidley considered this a rather surprising result because it has always been taken for granted that bleeding is a characteristic of the pigment rather than of the rubber.

"The peculiar bloom of butyl rubber is objectionable for pastel colors. Mr. Gidley thought that this difficulty could be overcome if we would reduce the stearic acid content from the present 3% to 1%, or ⅓ of 1%. He felt that 1% of stearic acid should be considered about the limit for consumer rubber items, particularly when used without carbon black. Along this general line Acushnet is also working on nipples made from butyl rubber. Because of the content of pigment, i. e., zinc oxide introduced in the banburying of the stock with which they have been supplied in the past, they have not been able to meet the trade's requirement of a transparent or semi-transparent article. It was therefore agreed that we would supply Acushnet with a one-pound sample of uncompounded stock, although it would not be considered objectionable if we should prefer to introduce as much as ½ or 1% sulfur in this material as a stabilizer.

"Acushnet had approached the Navy Bureau in Washington with an offer to work on the adhesion of butyl rubber for the acid-proof lining of submarine storage-battery compartments. In return they had been requested to send in a bid for a regular submarine lining job. As Mr. Gidley felt that this was moving a bit too fast, the matter will be dropped here unless we should decide to contact the Navy in an effort to initiate a test program along such lines. (Because of the low curing temperatures ordinarily specified for this kind of a job, we are not in favor of pushing the matter further.)

"Acushnet has made considerable progress in the vulcanization of butyl rubber and has succeeded in reducing the curing time to 5 minutes at 300° F.

Digitized by Google

The product obtained has a satisfactory tensile strength and the 'permanent set is not bad—about 20%.' (This figure seems quite high to us and must refer to some special test rather than to the standard A. S. T. M. procedure.) In an attempt to speed up the cure Acushnet has devised a rather unique procedure which consists of impregnating very finely divided cotton linters or wood pulp (about 200 mesh) with calcium hypochlorite (ordinary bleaching powder) and milling this into the butyl rubber together with the regular compounding ingredients. The milling is carried out at high temperature which may contribute to the resulting fast cure" (exhibit 190).

SURVEY OF THE TESTING OF BUTYL RUBBER

The following facts stand out when one considers the testing and developing which have taken place with regard to butyl rubber. Considerable work has been done in the Esso laboratories down through the years. And yet it is the fact that the Standard Development Co. had no more than three technical employees working on this valuable development as recently as May 1941, 3 years after having given it to the Germans.

The one rubber product company which had been furnished samples of butyl (not having been selected by Standard) has been consistently enthusiastic and has accomplished more than the larger companies in mastering the art of utilizing butyl. An instance of this is found in the matter of adhering butyl to metal, a problem which continued to bother the tire companies long after Acushnet had solved it.

The two tire companies selected by Standard to test butyl for tires and tubes were those having the largest investments in natural rubber and the slightest experience and interest in working with synthetic rubber. One of the two companies, United States Rubber, is controlled by du Pont, which has its own synthetic rubber products selling under the name Neoprene, and which in recent years has been developing a new synthetic rubber which would be in competition with butyl and buna for tire and tube uses.

To summarize, Standard supplied both companies with approximately 1,000 pounds of the original type A butyl. Part of this was second-grade material and the remainder was recognized as being inferior to other types of butyl which were being developed. Each of the companies made a few tires of this material, attempting to use natural rubber technique so far as possible. The first tires were approximately half as good as natural rubber tires.

Small quantities of two improved types of butyl were supplied each company within a short time. Firestone made three tires of C–2 type material and found them to be an improvement over the original type A tires. United States Rubber made two tires out of D–4 material and found them to be an improvement over the original type A tires. The one tire made of this material actually tested on a car failed after 2,500 miles at 60 miles per hour as a result of rupture of the cotton cord and not because the butyl failed. With that tire test in November 1940 ended the testing of butyl rubber in tires.

As a result of these meager tests, United States Rubber informed Standard that tires which would give 55 to 65 percent of the service of first-line natural rubber tires if driven at speeds under 60 miles per hour could be made of butyl rubber. An important factor in the making of a tire is the carbon black used. Standard's program for developing suitable carbon black for use with butyl was not commenced until after the tire tests had ended. Although Standard and both rubber companies knew that the great problem was one of heat build-up and that rayon cords are superior in this connection no tire was made with rayon cord. Not only does the rayon itself withstand the heat far better than cotton, but it also permits the use of less rubber and in that way lessens the heat build-up.

In 1941 Standard found that a new vulcanizing agent when used with butyl rubber gives greatly improved results in laboratory tests with respect to the heat build-up in the finished product. No tire has even been made since this improvement in technique was developed, unless within the last few weeks.

One of the difficulties in connection with the whole testing program has been the unwillingness of Standard to pass on to one of the companies ideas or technique acquired from the other. As illustrative, Firestone could make good inner tubes of butyl superior to those mode of natural rubber nearly a year and a half ago and reported that fact to Standard in January 1941. United States Rubber

Digitized by Google

with all its experience and technical facilities still reports that the usable inner tube cannot be made of butyl rubber.

Standard has known for more than a year that Acushnet had quickly and successfully solved the problems of rapid vulcanization and adhering butyl to metal. There is no evidence that this knowledge was ever passed to the two rubber companies.

Firestone has recently solved the problem of making a butyl tread adhere to a natural rubber carcass. United States Rubber is still in the dark on this important phase of butyl development.

Even in connection with the buna program where Firestone and United States Rubber were both licensed to manufacture, and secrecy was not the watchword as in the case of butyl rubber, the inability to pass information from one to the other is found. In a letter of February 25, 1941, B. W. Vanderbilt of Development wrote W. E. Currie, vice president and patent attorney of Development, as follows:

"We are also constantly confronted with the problem of avoiding passing any information which we may receive from one of the companies on to the other. We believe that the possibility that such information may be passed on has made both Firestone and U. S. Rubber tend to be a little reluctant in discussing their Buna work with us" (exhibit 191).

In connection with butyl, Currie wrote Hopkins on March 24, 1941, as follows:

"Referring to your letter of March 19th, I believe the only practical way of getting advantage out of the cooperation with the rubber companies is to discuss inventions freely with them and secure advice on the filing of patent applications. *The only possible objection I see is that one of the rubber companies may feel that we are passing on to another information which should not be passed on. If we do the best we can to avoid this I should think there would be no objection to following out the procedure which you suggested in your letter of February 28th.*" (exhibit 192).

BUTYL COSTS

Standard's own computations show that butyl rubber can be made at a cost which is much lower than that of any other synthetic rubber, at approximately one-third the current cost of natural rubber.

The cost figures heretofore mentioned as having been prepared in June 1940 were discussed in the hearing before the Truman committee. Herewith is set forth every set of butyl cost figures which could be found in the Standard files. First are those in which Standard was figuring costs for itself. Later are those where the costs are being figured for the United States Government.

BUTYL COST ESTIMATES AS OF OCTOBER 20, 1939

(Exhibit 193)

10 Ton/Day Butyl Rubber Project, Bayway Summary of Investments

1. 10 T/CD Polymerization Plant, Paratone area, Total investment, on- and off-site	$800,000
2. 1.5 T/CD Butadiene Recovery and Purification Plant, Paratone area; Total investment on- and off-site	145,000
3. 30 T/CD Isobutylene Regeneration Plant, Chem. Prod. area; Supplying feed to both Polybutene and Butyl Rubber Plants; New investment only, on- and off-site	315,000
New Investment for Producing Isobutylene and Pure Gum Butyl Rubber, before Banbury treatment, storage or packaging	1,260,000
4. Product Handling Facilities, Paratone area; for Banbury treating, storing, packaging and shipping; New investment, on- and off-site	200,000
Total New Investment for Isobutylene and Butyl Rubber Projects	1,460,000
5. Existing Equipment Used for Isobutylene Absorption Unit; Dimer Plant equipment, Chem. Prods. area, used to absorb i-C_4H_8 for both Polybutene and Butyl Rubber Plants Original book value of equipment, before depreciation	[1] 240,000

[1] Polybutene and butyl rubber each take 50 percent of isobutylene produced. Consequently only 50 percent of items 3 and 5 are chargeable to butyl rubber project

Digitized by Google

10 ton/day rubber project, Bayway, summary of production costs

[Production, 7,300,000 lbs./yr., 20,000 lbs./cal. day]

	¢/lb. Pure Gum Butyl Rubber [1]	
	With 10% Deprec	Without Deprec
1. Polymerization Plant; processing cost only (incl. mfg. of C_2H_4 makeup by dehydration of C_2H_5OH, due to small-scale operation)	6.0¢	4.9¢
2. Isobutylene; fresh feed to Polym. unit. 1.23 lbs. at 2.3¢/lb. cost of production in Isobutylene Plant (charging 3.5¢ gal. for net C_4 consumed by latter)	2.8	2.1
3. Butadiene Recovery & Purification Plant/processing cost only for 1.5 T/D C_4H_6 purified, feeding mixture of polymerization plant purge gas and dilute make-up butadiene as purchased from outside: 0.15 lbs. at 9.4¢/lb. for purification	1.4	1.2
4. Butadiene Makeup, Dilute C_4H_6 (10–50%) delivered at plant for 12¢/lb. C_4H_6. Net consumption (product-losses) at 5% of product. 0.05 lb. at 12¢/lb	0.6	0.6
Production cost of washed pure gum product before Banbury treatment, storage, packaging, etc	10.8¢	8.8¢
5. Product Handling; Banbury Treatment [1] conveying, storing, packaging, and loading product	2.2	1.9
Total Production & Handling Cost for product, f. o. b. Bayway	13.0¢	10.7¢
6. Allowance for Sales & Service; to cover sales, promotion, advertising, customer service, and technical assistance	2.0	2.0
Total expense	15.0¢	12.7¢
Net realization, at price of 50¢/lb. f. o. b. Bayway, available for amortization and profit	35.0¢	37.3¢
Net Return on 7,300,000 lbs./year	$2,560,000	$2,720,000

Pay-out on Total Investment, new and existing, including 50% of Isobutylene Plant which should be charged to Polybutene rather than to Butyl Rubber, i. e., $1,460,000–$240,000=$1,700,000 — *Months* 7.5

Pay-out on New Investment chargeable to Butyl Rubber project only; i. e., $1,460,000–315,000/2=$1,300,000 — 6

[1] All costs, and sale price, assumed based on weight of pure gum butyl rubber. Cost of any materials added during Banbury treatment assumed repaid or balanced by actual weight and price billed to customer.

BUTYL COST ESTIMATES OF JUNE 4, 1940

(Exhibit 194)

Estimated cost of butyl rubber—Baytown

[Case 1–100 Ton/Day Plant—Case 1–300 Ton/Day Plant]

	Case I			Case II		
Quantities:						
Butyl Rubber Production, T/D		100			300	
Isobutylene Consumed, lbs/D		212,000			636,000	
Butadiene Consumed, lbs/D		10,000			30,000	
Normal Butane Consumed, BPD		1,550			4,650	
Investments:						
Isobutylene		$4,400,000			$10,500,000	
Butadiene		750,000			2,200,000	
Butyl Rubber		4,650,000			11,100,000	
Total incl. 25% for offsite		$9,800,000			$23,800,000	
Production cost, $/day:						
Isobutylene	at 3.1¢	$6,500	3.3¢	at 2.7¢	$17,300	2.9¢
Butadiene	at 12.2¢	1,200	0.6	at 9.2¢	2,800	0.5
Butyl Rubber		7,300	3.6		19,300	3.2
Total		$15,000	7.5¢		$39,400	6.6¢
¢/lb. butyl rubber: Increase in ¢/lb. butyl rubber for a $1/bbl. increase in normal butane			0.78¢			0.78¢

Digitized by Google

EXTRACT FROM EXECUTIVE COMMITTEE MEMORANDA AUGUST 29, 1940

(Exhibit 195)

"Mr. F. A. Howard joined the meeting and presented for inspection of the Committee the first tire made by the Firestone Tire and Rubber Company of butyl rubber—the first tire made 100% of petroleum. He said this tire had been run 2,500 miles and that it showed 10% more wear than natural rubber tires.

"Mr. Howard said that he estimated that butyl rubber would cost between 7¢ and 15¢ per pound, depending upon the method of manufacture, versus 20¢ per pound for natural rubber at this time."

BUTYL COST ESTIMATES SEPTEMBER 26, 1940

(Exhibit 196)

"DA" project

BUTYL RUBBER

[30,000 Long Tons/Annum—Butyl Rubber—Baytown]

Investment in Baytown for Butyl Rubber	$14,271,200
Butane Isomerization and Fractionation	1,233,000
Catalytic Dehydrogenation	2,385,000
Isobutylene Concentration	1,605,000
Polymerization	4,140,000
Finishing and Storage	1,270,000
Steam, Power, and Water	2,940,000
General (Office, Laboratories, Shops, Change House, Roads, and Tracks)	540,000
Land (36 acres)	7,200
Outside Facilities	151,000
Investment at Baton Rouge for C_4 Diolefin Manufacture	480,000
Diolefin Extraction	360,000
Utilities	93,000
Land (1.3 acres)	1,000
Initial Chemical Charges	26,000
Total Investment for 30,000 Long Tons/Annum	14,751,200

"ROUGH ESTIMATES OF OPERATING COSTS

"*Butyl rubber.*—11c/lb., including 5-year amortization.

"This operating cost and the DA investment cost are based upon using C diolefins extracted at Baton Rouge. If DMB is required it is approximately estimated that further investment of $500,000 will be necessary, and the Butyl rubber cost would be increased by 1c/lb.

"Of the above 11¢, the amortization amounts to approximately 4.4¢, or 2.2¢ more than normal 10-year depreciation.

"*Butadiene.*—14c/lb. at Baytown, 16c/lb. at Baton Rouge.

"The five-year amortization makes up about 6.5¢ of each of the above figures, cost with normal depreciation being approximately 3¢ less.

"Butane value is taken at 2¢ gallon in both the Butyl rubber and butadiene estimates. In the case of Baton Rouge, an additional 2¢/gallon of butane is required for shipment from Baytown to Baton Rouge."

In a memorandum of September 27, 1940, from M. B. Hopkins to Mr. H. C. Wiess, president of Humble, it is stated:

"Estimates by Jersey engineers indicate that Buna type rubbers require capital investments including raw materials which are about twice the investment for Butyl rubber, and production costs are also about twive Butyl production costs. The Goodyear and Goodrich companies have indicated that their estimates of Buna capital and operating costs are considerably lower than Jersey's corresponding estimates."

Digitized by Google

BUTYL COST ESTIMATES NOVEMBER 27, 1940

(Exhibit 197)

Preliminary estimates for Butyl rubber at Baton Rouge

Tons Rubber Per day	10	25	50
Isobutylene	$442,000	$710,000	$1,080.000
Diolefine	175,000	225,000	297,000
Polymerization	1,080,000	1,700.000	2,635,000
Banbury	303,000	460,000	730,000
Tie-ins	207,000	321,000	495,000
Total investment	2,207,000	3,416.000	5 237,000
Production cost:			
Cents per lb. ex depreciation	11.1	7.18	5.72
Cents per lb. with 10c depreciation	13.9	8.93	7.07

"Investments include labor, contractor's fee, and overhead. Figures for 25-ton plant obtained by interpolation. Value of dilute isobutylene taken as 4.61 cents per gallon. Polymerization process based on use of continuous overflow reactor. Rough figures on 5-ton plant show production cost of 17.3 cents per pound ex depreciation, 21.8 cents with depreciation."

On January 7, 1941, Howard wrote W. C. Teagle the following memorandum (exhibit 198):

"The attached memorandum dated December 20th indicates the present situation as regards sales outlets for butyl rubber. It is expected to have similar information from the Firestone Company very soon.

"On the manufacturing side, apparently our commercial development program will go in one of two directions—first, manufacture of a small quantity (2 to 5 tons per day), which may cost us say 25¢ a pound or more, or manufacture of 50 tons per day at a cost of 10¢ a pound or less.

"We will expect to reach a decision on this and start a plant as soon as the Buna rubber program is out of the way—which we expect will be before the end of this month."

An Economic Study of Butyl Rubber Production, dated February 20, 1941, by A. D. Green, contains the following data (exhibit 199):

"SUMMARY

"In Table 1 on the following page will be found a summary of the estimated new investments at Baton Route, Bayway, and Baytown for butyl rubber capacities of 5 to 50 tons per calendar day. At Baton Rouge the total cost would vary from about $1,552,000 for a 5-ton plant to $5,237,000 for a 50-ton plant, the latter capacity corresponding to the total available refinery isobutylene as indicated for the year 1942. These, and following estimated investments, are to be considered as merely preliminary and should not be used for appropriation purposes without further check. No investments are included for facilities to make additional butylenes, as might be necessary if large butadiene plants are also installed.

"For location at Bayway, the total investment is estimated as $1,423,000 for a 5-ton plant and $4,896,000 for a 42-ton plant, which is the maximum size possible taking the refinery outlook for the next few years and earmarking part of the isobutylene for Paratone and polybutene manufacture. There is a slight saving indicated for Bayway over Baton Rouge for the 5-ton and 10-ton sizes because existing isobutylene absorption equipment can be utilized, but for larger plants Baton Rouge shows a slight advantage in investment.

"At Baytown the estimated investments vary from $2,268,000 for a 10-ton unit to $5,047,000 for the maximum size plant of 50 tons. The latter shows a $190,000 saving (or 4%) over the Baton Rouge, due primarily to using equipment at the hot-acid copolymer plant. The isobutylene concentration equipment was estimated by Humble, and their design differs to some extent from the S. O. D. design for Baton Rouge. It is felt that if both designs were on the same basis, the cost difference would be decreased."

EXTRACT FROM EXECUTIVE COMMITTEE MEMORANDA

(Exhibit 200)

"March 19, 1941

"With reference to Committee memorandum of March 3, 1941, Committee reviewed, and saw no objection to, the proposal of Standard Oil Development Company to undertake, at an expenditure of approximately $25,000, necessary engineering work, including design, drafting, and listing equipment required, in

Digitized by Google

connection with the proposed construction of a ten-ton-per-day butyl-rubber plant, the location of which may be Baton Rouge. The ultimate construction cost of such a plant was estimated to be about $2,500,000, and the plant will be designed so that with an additional expenditure of $1,000,000 it could be expanded to a capacity of 20 tons per day. It was indicated that the process used for the manufacture of butyl rubber can be used for the manufacture of Vistanex and, in fact, may be a definite improvement over the present Vistanex process. The estimated manufacturing costs for butyl rubber or Vistanex on the proposed scale of production of about 10 tons per day will be approximately 16.5¢ per pound, including normal depreciation (8%). Based on an estimated realization of 30¢ per pound, this will return about 40% on the initial investment after normal depreciation.

"REQUEST FOR APPROPRIATION

"Standard Oil Company of La., $3,500,000

"*Project.*—20 Tons/day Butyl Rubber (and Vistanex) Plant.

"*Return on investment.*—On the first unit of 10 T/D ($2,500,000 Investment= 40%. On the complete unit of 20 T/D ($3,500,000 Investment=40%.

(NOTE.—It is assumed that while the production cost will be reduced on the expanded scale of 20 T/D, some reduction in sales price will, in all probability, be necessary to move this quantity. Sales price assumed on the 20 T/D scale is $0.25/lb. as compared with an approximate average of $0.20/lb. on natural rubber over the past several years.)

"*Justification.*—The justification for this project was discussed in detail with Mr. H. W. Fisher's letter of March 14 to Mr. H. L. Shoemaker, a copy of which is attached. Since that time the design of the plant has proceeded and it is now expected that, except for the polymerization step which is dependent upon some further pilot plant operation, the process design will be completed about June 1. Because of the present critical situation on procurement of materials, it will be desirable to place orders at the earliest possible date.

"Since the aforesaid letter of March 14 was written, potential markets for Vistanex have developed further and it is now very apparent that a shortage will develop before this plant can be built.

"It is proposed that the equipment for producing the raw material from refinery gases will be installed now for the full capacity of 20 T/D. This same policy would also apply to any other parts of the plant where appreciable economies could be effected by making them initially of the larger size. The polymerization and finishing equipment however would be planned for the smaller capacity of 10 T/D, recognizing the fact that before this capacity is installed it may, if the Country's supply situation on natural rubber becomes critical, be desirable to expand it to the full 20 T/D capacity.

"*Budget.*—Standard Oil Company of La., $3,500,000, additional to the 1941 approved Physical Capital Budget.

"Recommended for

"Approval:

"_____ _____."

On October 27, 1941, A. C. Minton, secretary, wrote Richardson Pratt, director, and said (exhibit 201):

"The Executive Committee this morning reviewed, and saw no objection to the following additional expenditures contemplated by the companies indicated, which it is understood will constitute additions to the adopted 1941 Capital Budgets of the respective companies:

June 11 estimated cost	Additional requirement	New total
Butyl rubber and Vistanex plant: 20-ton/day ($650,000 for increased cost of present 10 ton/day plant $1,390,000 for expansion to 20-ton/day plant) 2,500,000	$650,000 1,390,000	---------- ----------
	2,040,000 3,999,000	---------- ----------

On January 16, 1942, Howard wrote a memorandum to R. W. Gallagher, Standard Director, the first two paragraphs of which are as follows (exhibit 202):

"It is to be anticipated that during the coming week we will be asked to submit a definite proposal on the production of butyl rubber in large amounts, perhaps

Digitized by Google

up to the 120 to 150 ton per day maximum amount which we have previously indicated it would be possible to produce in our own refineries, from existing raw materials. We have furnished to the O. P. M. at their request the following data on synthetic rubber:

"Our last estimate of manufacturing costs, based on units of 20 tons per day capacity (which is the size now under construction at Baton Rouge) and which would probably duplicate for expansion of this program, is 15 cents per pound. (I told them I did not recall whether the figure of 15 cents did or did not include our normal refinery depreciations on the unit. These normal depreciations average about 6 percent.) Our estimate of investment cost for a unit of this size is approximately $4,500,000."

Butyl Cost Estimate Baton Rouge, Louisiana (Exhibit 203) February 6, 1942

Raw Material:	¢/# of Butyl Rubber
Isobutylene at 7.76¢ gal	1.70
Isoprene at 30¢/#	1.20
Operating Costs:	
Operating Labor and Supervision (Approximately 26 men/shift)	2.17
Maintenance:	
Normal	2.01
Changes and Additions	1.55
Utilities:	
Fuel-free	.46
Fuel at 12¢/MM Btu	.86
Chemicals:	
Methyl Chloride	.35
Aluminum Chloride	.30
Other chemicals	.49
Total	1.25
Other supplies	.12
Burden and Administrative and General Expenses	3.18
Containers	.71
Total, excluding Royalty, Depreciation, Profit	[1] 15.21

[1] Total profit, say $15.00.

SUPPLEMENTARY MEMORANDUM

(Exhibit 204)

Suggestion on Butyl Rubber

"The following is an estimate of the financial picture which would result from the plan outlined in Mr. F. A. Howard's memorandum of *February 12, 1942*, on Butyl Rubber—Basis 1-20 T/D unit costing $4,500,000:

Feed cost:	c/lb.
Isobutylene	1.70
Diolefin	1.00
Operating costs	12.30
Total operating costs	15.00
Technical advice & service to customers	0.50
Mutual plan expense	0.50
Total cash expense	16.00
10% Depreciation on $4,500,000	3.08
7% Profit	2.16
	21.24
Credit for repayment of loan	6.16
Interest on loan	0.62
Net realization on Butyl	14.46
Indicated operating loss to Jersey	1.54

Digitized by Google

"Assuming the proposed 3 unit plant at Baton Rouge, cost would be $13,500,000 all loaned by the Government.

"5 yrs. production—219,000,000 lbs. on which Jersey's loss is (at 1.54c lb.)—$3,372,600.

"Offsetting this loss is the fact that at the end of the contract Jersey owns the plants free and clear, plants originally costing $13,500,000 and which are 5 years old, i. e. Jersey gets plants for 25% at end of 5 years.

"There is also the possibility of additional profit through savings. If the savings amount to 2.5c/lb. and Jersey shares equally with Government, Jersey gets 1.25c/lb. or $2,737,500, reducing its investment in the 5 year old plants to only $635,100.

"Further items to be considered are that for 3-20 T/D units Jersey would have to invest:

1. Steam & Power facilities	$750,000
2. Diolefin unit	750,000
3. Laboratory facilities	100,000
	1,600,000

"The investment would be partly recovered during the contract in costs charged to the Butyl operation.

"[s] H. W. FISHER."

On January 26, 1942, Howard wrote to Howard J. Klossner, President, Rubber Reserve Company, concerning butyl rubber. He made the following statements concerning costs (exhibit 205):

"Cost estimates and contemplated sales price

"There is now being installed at the Baton Rouge refinery of the Standard Oil Co. of Louisiana the first commercial Butyl rubber plant, designed to produce 20 short tons per day of either butyl rubber or Vistanex. This plant is now scheduled for completion November 1st of this year. It has a project priority rating of A–1–B, which is not sufficient to secure any earlier completion. We estimate that, with our present state of knowledge of the process, the butyl rubber in this plant may cost about 15¢ per lb., when the plant is operated at about designed capacity and reasonably satisfactorily in all other respects. We had considered introducing this product on the commercial market at a price of approximately 27¢ per lb., and have named this price in commercial negotiations. This rather high margin over estimated cost is required by the fact that the process and equipment are now and will therefore have to pass through a period of "children's diseases" in which production may be lower than anticipated, and cost higher, and the equipment originally installed may become partly obsolete as our knowledge of the new processes involved increases.

"Investment costs and construction materials required

"Our present estimates are that a 20-ton-per-day unit, similar to the one being constructed at Baton Rouge, would cost $4,500,000. The only important quantities of critical materials employed are stainless steel, fabricated steel, ordinary electrical equipment, and rubber mills. The mills might be borrowed from existing rubber plants."

It is understood that the contracts between Standard and Rubber Reserve Company for butyl are based on cost figures totaling 22.81 cents per pound.

AVAILABILITY OF ISOBUTYLENE

Standard caused a computation to be made on January 16, 1942, showing the availability of isobutylene at major United States refineries and potential butyl rubber production. The report indicates that approximately 22,000 barrels per day of isobutylene are being produced. The estimate is 21,190 barrels per day estimated on the basis of crude-oil capacity of the major refineries and 22,420 barrels per day estimated on the basis of cracked-gasoline capacity. This would produce approximately 1,600 short tons of butyl rubber per day. The figures are 1,570 and 1,662 on the two bases just mentioned. In terms of annual production capacity this is equivalent to approximately 600,000 tons per year (exhibit 206). The memorandum prepared by George L. Ahrens stated that, "potential butyl rubber production was figured on the basis that all the estimated isobutylene production would go into rubber manufacture." For lack of

Digitized by Google

information, no attempt is made here to allow for the large expansion alkylate production which has been planned as a result of the war. The polymerization and alkylation capacities as of the beginning of 1941 are shown for each refinery to give an indication of the amount of isobutylene that might be consumed for aviation gasoline. The butyl rubber quantity assumes a 93-percent recovery of butylenes, 80-percent absorption of isobutylene, and 1.06-pound concentrated isobutylene per pound rubber (exhibits 207, 207a).

It is believed that the aviation gasoline program has been planned to take some amount between 120,000 and 150,000 barrels per day. In any event it does not seem to be a factor seriously limiting the production of butyl rubber. It is believed that the production of butyl rubber would be aided rather than limited by the present plan for large production of butadiene for buna. This is indicated in the following excerpt from a report on "Processes for the Production of Butadiene from Butylenes and Butane including Butadiene Concentration" prepared for and submitted to the technical adviser of Rubber Reserve Co. by Standard, February 12, 1934.

"Normal butane and isobutylene react somewhat more slowly than normal butylene and under the reaction conditions employed do not produce appreciable amounts of butadiene. These two compounds should, therefore, be regarded as feed stock impurities and, because of their lower reaction rate, will tend to build up in the recycle stream. In order to prevent this, a certain portion of the recycle stream must be returned to the feed stock preparation unit. While this does not present a particularly serious problem when adequate precautions are taken, it should be emphasized that the normal butane and isobutylene content of the dehydrogenation feed should be kept as low as possible" (exhibit 208).

In a letter to Howard J. Klossner, President of Rubber Reserve Company dated January 26, 1942, Howard makes the following statement relative to the possible supply of butyl:

"From raw materials available from equipment now in use and planned for immediate construction in its refineries in the United States, Standard Oil Co. (New Jersey) and affiliated companies could produce somewhere between 120 and 150 short tons per day of butyl rubber. Judging the remainder of the oil industry on a comparable basis, *raw material supplies adequate for any possible requirement would seem to be available*" (exhibit 209).

USES FOR BUTYL

Standard with its intimate knowledge of butyl's properties, and having reports from not only Firestone, but United States Rubber, Acushnet Process Co., and General Electric, in November 1940 had the following conception of the place of butyl rubber in the picture. Howard wrote Farish, November 6, 1940, "Outside of normal tires there seems to be a potential market of about 250,000 tons per annum for which butyl rubber might be suitable. *The detailed examination of this market and the effort to adapt butyl rubber to the most promising and lucrative part of it would be the field on which we would concentrate our technical work if we actually recast our program as suggested in the annexed letter.*

"*Of course from a practical standpoint we will not find any clear road and will have to ride both horses but it seems probable at this moment that we ought to shift the emphasis more strongly over into the specialty field*" (exhibit 210).

As early as June 1940 Acushnet found butyl rubber to be the most ideal synthetic for gas masks for troops (exhibit 211). A year later on June 9, 1941, Lieutenant Colonel Barker of the Chemical Warfare Service informed Dr. Frolich:

"In case we go into large-scale *civilian gas mask* production it looks like fabric laminated with thin layers of butyl, or impregnated with *butyl rubber, might be the only out*" (exhibit 212).

That a large quantity of butyl might be required for this purpose was known to Standard in May 1941 before construction on their 10-ton per day butyl plant was started.

Hopkins sent Frolich on May 28, 1941, a memorandum dated May 6, 1941, which Howard had received from Mr. Elmer Roberts, vice president of United States Rubber. It contains these statements:

"The possible use of strategic rubber raised the question of its availability. Two ounces of rubber per face piece would require 4,687 short tons for 75,000,000 masks. Some elastic head bands would also be needed for anchoring the face

Digitized by Google

pieces. This question of rubber availability is being cleared by the Sub-Committee on Civilian masks.

"The present estimate is that civilian masks may cost $2.00 each or $150,000,000 for 75,000,000 masks" (exhibit 213).

A memorandum dated February 24, 1938 in the Standard files suggested the use of butyl rubber in gas masks. This was less than a month previous to the delivery of the butyl information to the Germans (exhibit 214).

That butyl rubber and the polybutene polymers made by the same process make superior wire and cable insulation has been known to Standard for years. The developments in compounding technique to produce more rapidly extruding stock open up great fields for these materials. On January 15, 1941, R. B. Lebo gave L. B. Turner (both of Development) a memorandum indicating a total consumption of 12,000 tons of rubber in wire and cables (exhibit 215). Butyl and the other polymers made with the same process will undoubtedly be used in large quantities in this field.

One of the characteristics which has been most frequently mentioned in comparing butyl rubber with natural rubber is its low resilience. The difference in this respect has been greatly reduced by recent improvements in butyl compounding. However, for some purposes the lack of rebound is a decided advantage. For shock absorbing and vibration dampening butyl seems to have exceptional possibilities. Along this line the following memorandum of January 9, 1942, from Howard to Minton, secretary of the Standard board of directors and executive committee, is interesting.

"Mr. Elmer Roberts, vice president of U. S. Rubber Co., advises that Ordnance requirements for gun mounts, tanks, and other miscellaneous uses, aside from ordinary motor vehicle tires, have been officially estimated as of today as 50,000 tons for 1942 and 100,000 tons for 1943.

"This is almost in its entirety a new load, not reflected in the 800,000 tons consumption for 1941.

"The Ordnance Department has stated that it has funds available to finance construction of synthetic rubber plants for its own requirements as above and would be interested in receiving proposals" (exhibit 216).

It will be recalled that in October 1939 Standard officials believed butyl to have an advantage over natural rubber if the cost of the former were double that of the latter in fields totaling nearly 150,000 tons per annum. In the fall of 1940 the figure of potential use tonnage for butyl had been taken as 250,000 tons outside the tire business. Tests have indicated greater rather than less possibilities for butyl in these fields other than that of tires. When one adds 50,000 to 60,000 tons of inner tubes and the tremendous quantities of war materials such as gas masks, balloon fabric, soldiers' raincoats, paulins for airplanes, pontoons, boats, etc., the amount of butyl needed to fill the country's needs becomes enormous.

Standard commenced construction of a 10-ton-per-day butyl plant in the spring or early summer of 1941. On September 10, 1941, an unsigned memo was written which was found in the files of F. A. Howard. It reads as follows:

"F. B. Davis [of U. S. Rubber] called to discuss butyl rubber. It seems their desire to get protection against deliveries after the end of the war is dictated as much by a fear that the price of natural rubber will drop precipitantly at the end of the war as that their outlet for butyl rubber will end with the termination of the war. Apparently they expect to use at least a large part of their butyl rubber in tubes. It is up to us to find some way to make them a proposal which will give them reasonable protection against paying too high a differential over natural rubber for their butyl rubber after the war. If we find a solution of this problem, they seem prepared to make twenty or thirty-million pounds per annum of butyl rubber, beginning as soon as they can get it" (exhibit 217).

In October 1941, Standard decided to change the capacity of the butyl plant to 20 tons per day. In February 1942, the plans were changed at the request of the Rubber Reserve Company to provide for a capacity of 20,000 tons per annum. More recently new arrangements have been made for a total production capacity of 60,000 tons per annum.

PART III. A PATTERN OF DECEPTION

Reference has previously been made to the letter of E. M. Clark, vice president of Standard, to Dr. Carl Kruch, of I. G. Farben, dated April 30, 1930, which urged I. G. Farben to protect its patent situation as against du Pont (exhibit 14).

Digitized by Google

information, no attempt is made here to allow for the large expansion alkylate production which has been planned as a result of the war. The polymerization and alkylation capacities as of the beginning of 1941 are shown for each refinery to give an indication of the amount of isobutylene that might be consumed for aviation gasoline. The butyl rubber quantity assumes a 93-percent recovery of butylenes, 80-percent absorption of isobutylene, and 1.06-pound concentrated isobutylene per pound rubber (exhibits 207, 207a).

It is believed that the aviation gasoline program has been planned to take some amount between 120,000 and 150,000 barrels per day. In any event it does not seem to be a factor seriously limiting the production of butyl rubber. It is believed that the production of butyl rubber would be aided rather than limited by the present plan for large production of butadiene for buna. This is indicated in the following excerpt from a report on "Processes for the Production of Butadiene from Butylenes and Butane including Butadiene Concentration" prepared for and submitted to the technical adviser of Rubber Reserve Co. by Standard, February 12, 1934.

"Normal butane and isobutylene react somewhat more slowly than normal butylene and under the reaction conditions employed do not produce appreciable amounts of butadiene. These two compounds should, therefore, be regarded as feed stock impurities and, because of their lower reaction rate, will tend to build up in the recycle stream. In order to prevent this, a certain portion of the recycle stream must be returned to the feed stock preparation unit. While this does not present a particularly serious problem when adequate precautions are taken, it should be emphasized that the normal butane and isobutylene content of the dehydrogenation feed should be kept as low as possible" (exhibit 208).

In a letter to Howard J. Klossner, President of Rubber Reserve Company dated January 26, 1942, Howard makes the following statement relative to the possible supply of butyl:

"From raw materials available from equipment now in use and planned for immediate construction in its refineries in the United States, Standard Oil Co. (New Jersey) and affiliated companies could produce somewhere between 120 and 150 short tons per day of butyl rubber. Judging the remainder of the oil industry on a comparable basis, *raw material supplies adequate for any possible requirement would seem to be available*" (exhibit 209).

USES FOR BUTYL

Standard with its intimate knowledge of butyl's properties, and having reports from not only Firestone, but United States Rubber, Acushnet Process Co., and General Electric, in November 1940 had the following conception of the place of butyl rubber in the picture. Howard wrote Farish, November 6, 1940, "Outside of normal tires there seems to be a potential market of about 250,000 tons per annum for which butyl rubber might be suitable. *The detailed examination of this market and the effort to adapt butyl rubber to the most promising and lucrative part of it would be the field on which we would concentrate our technical work if we actually recast our program as suggested in the annexed letter.*

"*Of course from a practical standpoint we will not find any clear road and will have to ride both horses but it seems probable at this moment that we ought to shift the emphasis more strongly over into the specialty field*" (exhibit 210).

As early as June 1940 Acushnet found butyl rubber to be the most ideal synthetic for gas masks for troops (exhibit 211). A year later on June 9, 1941, Lieutenant Colonel Barker of the Chemical Warfare Service informed Dr. Frolich:

"In case we go into large-scale *civilian gas mask* production it looks like fabric laminated with thin layers of butyl, or impregnated with *butyl rubber, might be the only out*" (exhibit 212).

That a large quantity of butyl might be required for this purpose was known to Standard in May 1941 before construction on their 10-ton per day butyl plant was started.

Hopkins sent Frolich on May 28, 1941, a memorandum dated May 6, 1941, which Howard had received from Mr. Elmer Roberts, vice president of United States Rubber. It contains these statements:

"The possible use of strategic rubber raised the question of its availability. Two ounces of rubber per face piece would require 4,687 short tons for 75,000,000 masks. Some elastic head bands would also be needed for anchoring the face

Digitized by Google

pieces. This question of rubber availability is being cleared by the Sub-Committee on Civilian masks.

"The present estimate is that civilian masks may cost $2.00 each or $150,000,000 for 75,000,000 masks" (exhibit 213).

A memorandum dated February 24, 1938 in the Standard files suggested the use of butyl rubber in gas masks. This was less than a month previous to the delivery of the butyl information to the Germans (exhibit 214).

That butyl rubber and the polybutene polymers made by the same process make superior wire and cable insulation has been known to Standard for years. The developments in compounding technique to produce more rapidly extruding stock open up great fields for these materials. On January 15, 1941, R. B. Lebo gave L. B. Turner (both of Development) a memorandum indicating a total consumption of 12,000 tons of rubber in wire and cables (exhibit 215). Butyl and the other polymers made with the same process will undoubtedly be used in large quantities in this field.

One of the characteristics which has been most frequently mentioned in comparing butyl rubber with natural rubber is its low resilience. The difference in this respect has been greatly reduced by recent improvements in butyl compounding. However, for some purposes the lack of rebound is a decided advantage. For shock absorbing and vibration dampening butyl seems to have exceptional possibilities. Along this line the following memorandum of January 9, 1942, from Howard to Minton, secretary of the Standard board of directors and executive committee, is interesting.

"Mr. Elmer Roberts, vice president of U. S. Rubber Co., advises that Ordnance requirements for gun mounts, tanks, and other miscellaneous uses, aside from ordinary motor vehicle tires, have been officially estimated as of today as 50,000 tons for 1942 and 100,000 tons for 1943.

"This is almost in its entirety a new load, not reflected in the 800,000 tons consumption for 1941.

"The Ordnance Department has stated that it has funds available to finance construction of synthetic rubber plants for its own requirements as above and would be interested in receiving proposals" (exhibit 216).

It will be recalled that in October 1939 Standard officials believed butyl to have an advantage over natural rubber if the cost of the former were double that of the latter in fields totaling nearly 150,000 tons per annum. In the fall of 1940 the figure of potential use tonnage for butyl had been taken as 250,000 tons outside the tire business. Tests have indicated greater rather than less possibilities for butyl in these fields other than that of tires. When one adds 50,000 to 60,000 tons of inner tubes and the tremendous quantities of war materials such as gas masks, balloon fabric, soldiers' raincoats, paulins for airplanes, pontoons, boats, etc., the amount of butyl needed to fill the country's needs becomes enormous.

Standard commenced construction of a 10-ton-per-day butyl plant in the spring or early summer of 1941. On September 10, 1941, an unsigned memo was written which was found in the files of F. A. Howard. It reads as follows:

"F. B. Davis [of U. S. Rubber] called to discuss butyl rubber. It seems their desire to get protection against deliveries after the end of the war is dictated as much by a fear that the price of natural rubber will drop precipitantly at the end of the war as that their outlet for butyl rubber will end with the termination of the war. Apparently they expect to use at least a large part of their butyl rubber in tubes. It is up to us to find some way to make them a proposal which will give them reasonable protection against paying too high a differential over natural rubber for their butyl rubber after the war. If we find a solution of this problem, they seem prepared to make twenty or thirty-million pounds per annum of butyl rubber, beginning as soon as they can get it" (exhibit 217).

In October 1941, Standard decided to change the capacity of the butyl plant to 20 tons per day. In February 1942, the plans were changed at the request of the Rubber Reserve Company to provide for a capacity of 20,000 tons per annum. More recently new arrangements have been made for a total production capacity of 60,000 tons per annum.

PART III. A PATTERN OF DECEPTION

Reference has previously been made to the letter of E. M. Clark, vice president of Standard, to Dr. Carl Kruch, of I. G. Farben, dated April 30, 1930, which urged I. G. Farben to protect its patent situation as against du Pont (exhibit 14).

Digitized by Google

Ten years later Standard was still playing the game of aiding I. G. Farben and seeking to prevent American companies from acquiring an advantageous patent position in the field of synthetic rubber. On March 1, 1940, Hopkins wrote to Dr. H. Beller, of Chemnyco, I. G. Farben's New York representative, as follows:

"Thank you for your courtesy in sending us Dr. Semon's letter of February 20th with your letter of February 28th. We see no objection to your replying to Dr. Semon in accordance with the draft of letter which you sent us, nor to your plan to obtain the desired information from the I. G. We would, however, appreciate your letting us see the information you may obtain before it goes to the Goodrich Company.

"It is our understanding that the Goodrich Company has been spending considerable effort in the development of processes for making natural rubber and other rubber-like materials adhere to metal surfaces. It is therefore quite possible that the information you are able to obtain will be helpful to Goodrich not only in connection with Buna but in other connections, including the building of a patent position in the field of rubber adhesion to metal.

"Thanking you for sending us the correspondence, I am" (exhibit 218).

Following this advice from Standard, Beller wrote Dr. W. L. Semon, of Goodrich, on March 4, 1940, as follows:

"We wish to acknowledge receipt of your letter of February 20, 1940, concerning the development of Buna rubbers for lining metal tanks.

"The information we have in our files relating to the use of Buna in this field is rather limited and antiquated, so that a discussion of your questions would be of little value at the present time. We shall be glad, however, to get in touch with our friends and try to secure the information regarding the economical and technical possibilities of Buna linings, in which you are interested.

"We thank you for your inquiry and shall notify you as soon as the information which you desire becomes available" (exhibit 219).

No further communication on the subject was found in Hopkins' files, and it seems safe to assume that I. G. Farben thus cautioned by Standard never gave to Goodrich the desired information. Goodrich could easily verify or contradict this assumption.

It should be noted that this interchange between Standard and I. G.'s representative took place 6 months after I. G. was supposed to have withdrawn completely from the buna rubber development in United States and after Standard had been asked by the Munitions Board in October and November 1939 to aid in the largest possible development of synthetic rubber in this country. That Standard was interested in building a patent position in this field is indicated by the letter of Robert E. Ellis of its aviation department to Goodyear April 30, 1940:

"This company is interested in securing as much information as possible concerning the use of synthetic rubber in airplane fuel tanks. It is believed that there are a number of different type tanks used; some where the rubber material is simply used as a lining to prevent leakage; others where the rubber material is used inside the wing so that the tank may take the shape of the wing camber and fit snugly into the wing structure.

"It is understood also that there are some patents in connection with the use of synthetic rubber in fuel tanks. Would it be possible for you to give this company as much information as you can concerning the use of synthetic rubber in your fuel tanks? Particularly, if you have any patents on this subject, could you give us references to them?

"We should like to know also how these tanks compare with the conventional aluminum ones with respect to weight, costs, and service.

"Any information on this subject will be greatly appreciated" (exhibit 220).

* * * * * * *

In the projected American tour of the I. G. Farben representative in the fall of 1938 consideration was given as to how the synthetic rubber program should be presented to "outside interests in the United States," Howard wrote Farish on November 18, 1938:

"Mr. ter Meer, of the I. G. Farbenindustrie, will arrive in New York on Thanksgiving Day and will be accompanied by Dr. Muller-Cunradi. Dr. ter Meer must sail from here the 16th of December.

"During their stay they wish to review the entire situation in connection with the establishment of a synthetic rubber industry in the U. S., which will involve (1) a study of the available hydrocarbon gases and a comparison of data on processing costs, which will be made by Dr. Muller-Cunradi jointly with our

Digitized by Google

technical people, and (2) a review of the economic and financial aspects of the project. In this last connection, Dr. ter Meer believes it will be desirable to consult with the heads of all the principal rubber companies.

"The question which should be settled at the outset is whether, in the discussions with outside interests in the U. S., it is desirable that Dr. ter Meer should present the matter as an I. G. project, identifying Jersey only as a probable cooperator and supplier of raw materials, or whether it is in the interests of both parties that the matter should be presented from the outset as a project which, if undertaken in America, will be a primarily American project, sponsored by Jersey, but of course based upon the German I. G. technical foundation.

"Not being able to see clearly just how the matter would proceed practically in the U. S., or what would be in the interests of the parties, we have, in the few discussions with outsiders which have been held to date in the U. S., straddled the above issue, but it would appear that we shall have to give a little more definite indication of our position in the matter if we are to make very much headway during Mr. ter Meer's present visit.

"My present opinion is that it is probably desirable, without making any definite statements on the subject, to conduct the discussions in the U. S. in all cases jointly with Dr. ter Meer and under such conditions as to give the definite impression that Jersey is taking a leading part in developing the situation here" (appendix 13, exhibit 61).

* * * * * * *

In view of the clearly expressed desire of the Munitions Board to have Standard aid in the quickest possible development of synthetic tires in this country, Standard's method of dealing with the situation is interesting to say the least. Howard wrote F. H. Bedford, Jr., of Atlas, the Standard tire subsidiary, on April 10, 1940, as follows:

"My guess is that enough Buna could be available to permit introducing a small number of premium tires on the market about the end of the present year. We certainly would not be able to meet the demand if it grew rapidly, but from the standpoint of our primary objective in introducing such a tire (which would be to gain prestige) the fact that the supply would be so limited that the tires would have to be rationed for some time would simply make people more anxious to get them, and would create more publicity" (exhibit 221).

In the memoradum of November 16, 1929, which was referred to earlier in this statement, Howard states:

"It would probably not be lawful to license the Buna rubber on condition that the butadiene supplies be purchased from us. It might be possible for us to license on condition that each licensee cross-license us under his own improvements but not require the licensee to pass such a cross-license through us to other licensees. If this proved possible, the effect would be that we should have the right (and would be the only company to have a right) to operate under all the Buna N basic and improvement patents of all manufacturers. This might possibly be of value to us but we could only capitalize it by actually engaging in the business ourselves. If we want to do this, it would be better to do it at the outset" (appendix 37, exhibit 91).

This attempt to get the rubber companies into a license arrangement which would result in a continually increasing dominance of Standard was partially successful. As has been stated, it has only failed of consummation by reason of the refusal of Goodrich and Goodyear to become parties, the outbreak of the war, the antitrust prosecution, and consent decree.

L. B. Sebrell of Goodyear stated in his July 19, 1939, report of a conference with Hopkins on July 17, 1939, that—

"The Standard Oil Company propose to set forth the complete details of their butyl rubber in a general paper to be given at the American Chemical Society Meeting in Detroit the week of September 9 * * * They think the butyl rubber will be much more worthwhile than the Buna type rubber and believe that the Government will be much more interested in it than in work on regular Buna. Their position, as Hopkins sees it, is that if there is an emergency they are willing to contribute their patents to the Government, if all others are requested to do likewise, and leave it to an impartial judge to determine what compensation they should receive for their contribution. In the meantime, they see no other alternative but for each company to pursue its own respective course. They are strongly in favor, however, of a large cooperating plant, and it appears that they have urged the Government to take this view of the situation, that a

Digitized by Google

national emergency does now exist, and that such a large-scale plant ought to be built. Of course, this is in line with Mr. Howard's previous thoughts" (exhibit 222).

About 3 weeks later the following entry appears in the Standard executive committee memoranda of August 6, 1940.

"Mr. Howard advised of receipt of a telegram from Mr. Clarence Francis of the National Defense Advisory Commission confirming the meeting to be held in Washington on August 7 to consider all necessary steps to provide total capacity for synthetic rubber of 100,000 tons per annum, and suggested methods of insuring a market for this quantity. The telegram advised, also, that the industry will be asked to engineer, at its own expense, plants which represent the practical commercial units fitting into the program, making whatever arrangements necessary for raw materials. Plants to be engineered should be in general accord with a fesaible program for our interests alone or in cooperation with others. No definite commitments will be asked for at this time with respect to plant construction.

"Mr. Howard said it would be his preference that we not invest any considerable sums in the manufacture of buna rubber, but give such aid and advice as might be helpful. He preferred, in view of the greater possibilities of our interests' butyl rubber, to advise the Committee that we are considering building a plant to manufacture 10,000 tons per annum of butyl rubber, but that if the Government would be interested in giving protection to the extent of 5¢ per pound to the whole rubber field, our interests might be willing to construct a plant to manufacture up to 30,000 tons of butyl rubber per annum on a five-year contract basis" (exhibit 117).

Standard was willing to discuss butyl's superiority in an endeavor to induce Goodyear to fall in line with Standard's one-big-company plan. It was unwilliing to carry through on the threat and actually disclose to Government agencies the real facts concerning butyl rubber. Its exceptional cheapness of cost was never disclosed to any Government agency until the Antitrust Division took the documents from the Standard files in February 1942.

The offer which was made by Standard in offering to build a 30,000-ton butyl plant was shown to be merely a gesture. The offer with withdrawn in October 1940 before the so-called tire-testing program was well under way and before there was any report from either tire company as to the improved types of butyl (exhibits 119, 120, and 121).

In his statement to the Truman committee, Farish refers to the reduction of the Government synthetic rubber program to a mere shadow plant program in the winter of 1941. He failed to disclose Standard's participation in the scheme to bring about this reduction (exhibits 122, 123, and 124).

On February 27, 1941, A. C. Minton, secretary, wrote Howard as follows:

"With reference to your memorandum to me under date of February 24, this will confirm that the Executive Committee on February 25 saw no objection to the following proposals:

"(1) That our interests indicate to Firestone Tire and Rubber Company and United States Rubber Company that they would be willing to supply their requirements of butadiene if they were successful in inducing the Reconstruction Finance Corporation to substitute a 2,500-ton synthetic rubber plant for the 10,000-ton-per-annum rubber plant envisaged in earlier discussions on this subject * * *" (exhibit 223).

On October 17, 1939, Frolich wrote Murphree to tell him that the Navy Department's Bureau of Construction and Repair was particularly interested in perbunan (Buna N) and also in butyl rubber.

"In discussing this matter, the Navy Department registers surprise on having learned that appreciable quantities of buna rubber had been imported from Germany, and had been made available to various rubber-manufacturing concerns. This is the first point on which I need some help. Although it is my understanding that perbunan originally was imported in this country in competition with neoprene, I know nothing about the arrangement under which Buna S was made available to some of the tire manufacturers, or what part our company has taken in this test program.

"It is also pointed out that before extensive additional investigations are undertaken by the Navy Department, it is desirable to know the extent to which the commercial status of these three types of rubber has been altered through the present state of European affairs. Information is specifically requested as to whether we have actually gone into production of Perbunan and butyl rubber. This is the second question that I will have some difficulty in answering. Although I presume that I am to continue to be absolutely frank in regard to our

Digitized by Google

present and contemplated future activities in the field of butyl rubber I have no idea what to tell them about our policy in regard to Perbunan.

"I expect to be in New York tomorrow at noon, and I am wondering whether it might not be possible for us to settle the answers to these questions with Mr. Howard at that time, so that I may at least send a tentative reply to the Navy Department" (exhibit 224).

A startling example of the lack of absolute frankness in regard to butyl rubber is found recorded in a letter from Frolich to Hopkins dated November 21, 1939. It should be remembered that this was immediately after a meeting with the Army and Navy Munitions Board at which the Standard officials were made to understand that the Board was vitally interested in all the synthetic rubber possibilities. It was a year and a half after Frolich had prepared and Howard had given to the German I. G. Farben complete and detailed information concerning butyl. It was 5 months after Frolich had recommended that one of the co-discoverers of butyl rubber be sent to German to educate I. G. Farben on the valuable properties of butyl. With these facts in mind, this letter of November 21, 1939, by Frolich, director of the chemical division of Esso Laboratories, is rather surprising.

"Some time ago we received a rather detailed report on the preliminary work carried out by the Navy's Mare Island laboratories on the evaluation of the three synthetic rubbers submitted to them, i. e., Buna S, perbunan, and butyl rubber. Last week, Mr. Werkenthin, of the Navy's Bureau of Construction and Repair in Washington, spent the day with us here at Bayway to discuss the Mare Island laboratories' results, and to get some first-hand information on the compounding and general handling of these synthetic rubbers.

"Mr. Werkenthin was particularly interested in ascertaining how far we had proceeded in the development of butyl rubber. He seemed rather favorably impressed by the properties of this product as brought out by the movie and with the work in general, but perhaps he was somewhat disappointed to find that we are not closer to commercial production as he seems to be particularly impressed by the properties of butyl rubber.

"Because of the possible application of butyl rubber to some of the Navy's requirements, Mr. Werkenthin had been instructed also to look into the manufacturing process. You will recall that I took up this question with you before his arrival. As agreed upon, I took Mr. Werkenthin over to the "K" plant when it appeared that I could not very well steer his interest away from the process. However, I am quite certain that he left with no picture of the operations other than that a considerable amount of distillation and refrigeration is involved in the handling of the light hydrocarbons, and that refinery gas rather than straight butadiene is the raw material" (exhibit 225).

* * * * * * *

In his conference with Goodrich officials on November 10, 1939 Hopkins stated that tire rubber (Buna S) could not be produced unless "subsidized by the Government or someone with a free purse" (appendix 31, exhibit 85). This statement was made when the knowledge was fresh in his mind that Goodrich itself would be very much interested in participating in a large unsubsidized development of Buna S if it could be made for 25 cents a pound; and the further knowledge that it could be produced at 25 cents a pound with a very substantial return on the capital invested.

When Howard and Hopkins had a conference with the Army and Navy Munitions Board on the afternoon of November 15, 1939, they knew that the major rubber companies were interested in participating in a buna-rubber program for tires. Hopkins knew the facts because he had talked with officials of the various rubber companies the preceding week. Howard knew the facts as they were set forth in Hopkins' letters to him. The following excerpts make this clear. In his letter of November 13, 1939, Hopkins told Howard of his conference with the Firestone people at Akron, Ohio on November 10, 1939. He stated:

"Firestone is receptive to any suggestions as to how they can use synthetic rubbers but they are not taking the initiative. They have concluded that Buna S will make tires at least as good as natural rubber tires and perhaps with 10% better wear. * * * Firestone wishes to participate in any national plan to protect rubber supplies with synthetic material in case of emergency" (appendix 32, exhibit 86).

In his letter of November 13, 1939, concerning his conference with Goodrich officials Hopkins told Howard:

"With regard to Buna S, Goodrich finds it as good as or a little better than natural rubber. At a competitive price, they would be quite willing to use it to

Digitized by Google

replace natural rubber. They consider that production of at least 100 tons per day in the United States would be necessary to make it practical commercially from the standpoint of rubber companies taking hold * * *

"The most important point made by Goodrich in favor of independent production by the different rubber companies is that the immediate supply problem could be best met if it were not necessary to take the time to get all of the companies working together" (appendix 30, exhibit 84).

In his letter of November 15, 1939, Hopkins told Howard of his conference with U. S. Rubber Co. officials on November 14, and said:

"U. S. Rubber has not done as much with synthetic rubbers as Goodyear and Goodrich. * * * Without waiting for the results of the tire tests they feel fairly certain that Buna S would be a very good substitute for rubber if it could be produced at a satisfactory price. * * * With regard to Washington's interest in a rubber supply, Mr. Roberts [Vice President of U. S. Rubber] did not feel, from what he knew of the situation, that anything should be done at this time by the government in the way of encouraging synthetic rubber by subsidy. * * * In fact, the whole position of the company regarding the Buna development may be summarized by stating that their only concern seems to be that competitors may get a head start in the synthetic rubber field" (appendix 33, exhibit 87).

(The conferences with Goodyear and Goodrich did not take place until November 21.) Nevertheless, the presentation of the situation by Howard and Hopkins to the members of the Munitions Board was such that Major Browne reported the conference, using the following language:

"This company [Standard] cannot afford to develop Buna S on a large scale, since there is little or no commercial market. * * * No company wants to pioneer the development of Buna S on such a large scale that would be necessary to make the United States self-sufficient in respect to rubber—peacetime competition with natural rubber prevents, and the resultant financial burden is too much. * * *

"It was indicated that these companies [the 4 majors, du Pont, and Röhm & Haas] would probably be pleased to acquire the license for Buna N but would react unfavorably to the proviso [in the proposed license] requiring the development of Buna S. A Government subsidy, guarantee, or some sort of outlet for tires fabricated from Buna S would help carry the burden and ameliorate this restrictive contractual clause" (appendix 38, exhibit 92).

Howard in his memorandum of November 17, 1939, shows that the impression conveyed by Major Browne's report was a justifiable interpretation of what Howard and Hopkins had said. He states in this memorandum:

"None of the rubber companies desire to invest in commercial production of Buna S at this time" (appendix 37, exhibit 91).

On November 22, 1939, Howard wrote Colonel Hines, of the Munitions Board, and appended a short memorandum of corrections to Major Browne's report dated November 16, 1939. In this memo he states:

"It is hardly fair to say that the rubber companies would 'react unfavorably' to the development of Buna S for tire purposes" (appendix 39, exhibit 93).

He proceeds to state the matter in other words which seem to have substantially the same meaning.

"They certainly all have a real interest in this possibility, and a large amount of work would undoubtedly be accomplished voluntarily. On the other hand, it would not be easy to get definite commitments to persevere in such work on a substantial scale unless some means of compensation, direct or indirect, were involved in the arrangement. At the present moment the business interest of the rubber companies and the national interest run parallel, because the rubber companies still have a hope that, considering all questions of quality and cost, the synthetic product might be an economic competitor of the natural product. The national interest is not so definitely limited, however, and would remain active and important, even though it should be apparent that the synthetic product could not compete on an even basis. The problem is further complicated, however, by the fact that the natural rubber market is not a free market but is subject to control by foreign governments and cartels. A definite program which could be relied upon from the national defense and national economic standpoint therefore has to be based upon some set-up which will function whether or not the immediate commercial interest of the rubber companies remains active" (appendix 39, exhibit 93).

Digitized by Google

In the memorandum written for R. R. Deupree of the Office of Production Management handed to him in Mr. Teagle's office on March 28, 1941, and which he was asked to destroy after reading, Howard stated:

"Our honest opinion is that no one of these four largest companies is, in any important respect, sufficiently more advanced in the Buna field than the others, to justify more favored treatment than the others receive.

"The Firestone and U. S. Rubber companies have accepted a license from us for the Buna process, and this same license has been offered both to Goodyear and to Goodrich and is still open to them to accept" (exhibit 226).

He did not mention to Deupree the feature which was in the original license agreement form and which was never removed i. e., the requirement that the licensee should make available to the licensor (Standard) all its own patents and future improvements, thus building up Standard's dominating position.

In view of his statement that "no one of these four largest companies is in any important respect sufficiently more advanced than the others, etc." the language found in a memorandum signed by W. L. Semon of Goodrich is interesting. It is dated April 15, 1940, and reports a conference between Goodrich and Standard representatives in New York. The second paragraph begins:

"Mr. Howard said that Goodrich had probably advanced further in the field than any other rubber company.

* * * * * * *

"Mr. Howard admitted that S. O. D. needed Goodrich knowledge and experience in the field.

* * * * * * *

"S. O. is looking forward to developing a large centralized production of synthetic rubber. They do not wish to grant any licenses which will conflict with this larger objective.

* * * * * * *

"They believe that the rubber should carry, say, a 10% royalty. Half of this without question should go to the originators, I. G. and S. O. for the work which they have done and which they will in the future contribute to the field. The other half could be distributed to the licensees according to the value of their contribution.

* * * * * * *

"Mr. Graham asked how much Goodrich would get from this pool. Mr. Howard said that he presumed Goodrich would get 2 or even 3%, Goodyear might get a like amount and, of course, Firestone and U. S. would have to be recognized to some extent. Mr. Howard left this question open so that it is possible an agreement could be made that Goodrich would get a fixed amount which might even be as much as 3%. (Note that rubber whether made by S. O. D. or licensee, contributes to the jack pot.)

* * * * * * *

"The sales outlet was then discussed. S. O. D. saw no way to control price other than by taking title to all of the rubber to be sold.

* * * * * * *

"Mr. Graham then asked if Goodrich could participate in the sales company. S. O. D. must realize that it will be necessary to give sales service along with the sales of the product. Mr. Howard was afraid that such an arrangement might come up against the antitrust laws.

* * * * * * *

"Mr. Howard is leaving for Europe. He will meet Mr. Ter Meer in Basle, Switzerland, on April 25.

"During the week April 15 to 19 Goodrich is to discuss with Mr. W. F. Avery, the suggestions made in the conference. Goodrich is to report their reaction to S. O. as early as possible but before April 25 so that word can go to Mr. Howard on April 25" (exhibit 227).

The statements quoted above should be compared with Standard's announcement to the various rubber companies in Howard's letters dated November 6, 1939, of which that addressed to J. W. Thomas, president of Firestone is typical.

"I have now to inform you that the I. G. Farbenindustrie has withdrawn completely from participation in this Buna development in the United States" (exhibit 79).

Digitized by Google

On the question of whether Goodrich was further advanced in synthetic rubber technique than some of the other companies the following comments are in point. Dr. Beller of Chemnyco informed Standard on October 31, 1939:

"However Goodrich may deserve preferential consideration in this respect due to their outstanding development work and widespread technical use of Perbunan for mechanical articles" (exhibit 78).

On November 13, 1939, Hopkins wrote Howard:

"Firestone is interested in any synthetic rubber development but it was quickly apparent that immediate interest in Bunas is not as keen as that of Goodyear and Goodrich. This is possibly for the reason that Firestone has done no work to manufacture synthetic rubber such as has been done by the others" (exhibit 86).

On November 15, 1939, Hopkins wrote Howard:

"U. S. Rubber has not done as much with synthetic rubbers as Goodyear and Goodrich. Without waiting for the results of the tire tests they feel fairly certain that Buna S would be a very good substitute for rubber, if it could be produced at a satisfactory price. * * * He [Roberts, Vice-Pres.] said that if his company had the Buna patents they would not hesitate to move fast in getting a plant going. If, therefore, Jersey was considering licensing a rubber company, U. S. Rubber Company would be very much interested in taking a license. *They would, however, want the license to be exclusive*" (exhibit 87).

It has been previously indicated that the Hague memorandum was adopted by Standard and I. G. Farben on September 25, 1939, and dated back to September 1, 1939, to antedate the war. It accomplished a rearrangement of the parties' interests in Jasco, Inc., the corporation which had been formed in 1930 to exploit certain processes for the joint benefit of the two companies, throughout the world outside Germany. As has been shown, one purpose was to make Jasco appear to be a Standard wholly owned subsidiary to avoid interference from the Governments of Great Britain, France, and the United States (exhibit 70). F. R. Loofbourow, Standard attorney, explained the situation in a letter to Walter Schaefer of Standard's comptroller's department dated December 11, 1939:

"As you know, Jasco was originally organized with Development holding 50% of the stock and I. G. holding the other 50%. Through the investment of Development the Mutual Plan Companies contributed considerable amounts to Jasco. It is now contemplated that Development, through Jasco, shall receive all the profit from operations in the United States, British Empire, and French Empire, and that I. G., through assignment of the remainder of Jasco's business to it, should receive all the profit from operations in the remainder of the world. This involves a transfer of I. G.'s investment in Jasco to the Development Company.

"An important feature of the deal now contemplated is that Development's profit shall be compared with that of the I. G. and periodical readjustments made if the new arrangement produces different income results than those contemplated under the Jasco Agreement. It therefore becomes necessary to keep the income from the exploitation of Jasco assets entirely separate from income of other Jersey subsidiaries and to keep the exploitation of Jasco assets on an entirely independent basis. For this purpose it is contemplated that I. G.'s shares in Jasco be put into the hands of trustees rather than into the hands of Development itself in order that the trustees may vote the stock in such a way as to prevent any confusion in this regard. Incidentally, this keeps Jasco from becoming a subsidiary of Jersey since Jersey would not have ownership or control of a majority of the voting stock, and the problem which we discussed in this connection no longer arises" (exhibit 228).

The trust arrangement was carried into effect and thus Jasco was kept from being a subsidiary of Jersey (Standard Oil Co. (N. J.)).

The following letter was written by W. D. Crampton, Standard representative in France, to F. A. Howard February 20, 1941:

"As intimated to you briefly the other day, Dr. Ringer came to Paris to see me before I left end of January, and asked me to give you the following message in regard to cable which he had received, I believe, from your good self:

" 'Jasco cable will be difficult but one underlying point is that Jasco contract has not been wiped out as agreed whatever done the final financial outcome original intention of old Jasco agreement should govern.'

"He also asked me to endeavor to obtain further information in regard to Buna and Jasco.

"He also requested me to endeavor to find out what has happened to the S. O. D. shares which were deposited against an amount of £37,000 to be balanced out

Digitized by Google

through licensed payments through Hambros. He stated that he has had no news whatsoever from the S. O. D. on this question" (exhibit 229).

With the purpose in mind of procuring as accurate information as possible concerning the development of butyl rubber, this witness representing the Anti-trust Division requested Mr. F. R. Loofbourow, attorney for Standard, to procure a signed statement by Dr. Per K. Frolich, director of the chemical division of Standard Oil laboratories, giving the facts. The 7-page letter signed by Per K. Frolich and addressed to Mr. F. R. Loofbourow was delivered to the witness on or about February 27, 1942. Its contents will be of interest to the committee. Particular attention is called to the statement on page 6 which reads as follows:

"During the year 1941 very little additional work was carried out by outside companies. There were two reasons for this, one being that we never succeeded in building up much stock, and the other that what material we were able to make did not represent any improvement over that on which tests had been conducted in 1940.

"Out of this work came the decision to change from butadiene to a higher diolefin in order to produce a butyl rubber of improved physical properties. Moreover, in November 1941 we felt that we had arrived at a solution of the problem of continuous operation, at least insofar as the general mechanical principle was concerned" (exhibit 230).

It will be recalled that the change from butadiene to higher diolefins, namely, piperylene and dimethylbutadiene, took place in August or September of 1940 while the tire-testing program was in progress. This is shown by exhibits 168, 169, 170, 171, 174, and 178.

EXHIBIT No. 138

NATURAL RUBBER CARTEL

Statement by Alfred Kahn

The events of the past few months have demonstrated more clearly than ever before the enormous importance of rubber to the American economy, and the months which lie ahead will drive home the lesson. The succession of industries already affected by the numerous official rubber conservation orders reads like a roll call of American manufactures, and more and more will feel the pinch as road transportation is cut down for lack of tires and as more and more essential uses of rubber must be curtailed. Momentary reflection upon the major uses of the commodity is a sufficient reminder of its ubiquitous services to modern civilization. In 1940 crude rubber constituted some 15 percent of America's total imports for consumption. The aggregate sales value of manufactured rubber products in that year amounted to some $950,000,000. In wartime its importance is even further magnified by the dependence of mechanized, fast-moving armies upon ample supplies.

This committee has thus far been hearing evidence concerning the way in which patents have been used to stifle American production of synthetic rubber and the threat to national existence itself which has resulted. It should be pointed out, however, that patents are but one instrument of (1) monopoly control and (2) international economic Machtpolitik, and they are by no means always the most important. The control of geographically concentrated sources of essential raw materials can be an extremely effective weapon of power diplomacy, and has been used as such with equally telling effect in the past.

The following brief survey of the way in which the control of rubber supplies of the Far East has been used as such an instrument should prove of interest to the committee for several reasons. It is clear, on the one hand, that the German use of the patent weapon in the past has by no means been unrelated to the British and Dutch use of their natural rubber monopoly. And, although the Germans have been much more ruthlessly efficient and much more narrowly devoted to national welfare (as they conceived it), the usages have not been dissimilar. The story of the rubber restrictions of the 1920's and 30's, besides, provides a useful background for the study of the development of synthetic rubber in the past decade. The one has had a direct bearing on the other. Moreover these problems do not belong entirely to the past. The question must inevitably arise at the close of the war of the proper relationship in the world economy of natural and synthetic rubbers. This decision will involve crucial aspects of post-war international trade and monetary policies. One essential cornerstone of the post-war world, set forth in the Atlantic Charter, is the free-

Digitized by Google

dom of access of all countries to essential raw materials. The question of what will become of crude as well as of synthetic rubber will, therefore, be an enormously important one.

The monopolistic controls of crude rubber cannot be attributed entirely, or even in major part, to political factors. The nature of the rubber market provides cogent reasons impelling the rubber producers to seek the protection of production and market controls, for "prudential" as well as "predatory" reasons. On the one hand the demand for rubber is relatively unresponsible to changes in its price; paradoxically, in view of its physical characteristics, its demand may be said to be inelastic. Sixty to sixty-five percent of the rubber imported into the United States is consumed in the manufacture of automobile tires. Consequently the major demand for rubber is complementary to the demand for highway transportation. But since the cost of the crude rubber has been estimated at only 28 to 36 percent of the total cost of production of an automobile tire, and since the cost of the tire represents but a small portion of the total cost of providing automotive transportation, changes in the price of rubber obviously have slight influence upon the number of automobiles sold or upon the extent to which automobiles and trucks are driven. In the case of most other rubber products, the inelasticity of demand springs from the lack of adequate substitutes. Moreover, since the expenditure required, within a wide price range, for such limited amounts of rubber footwear, hot water bottles, and garden hose, as the ordinary consumer could advantageously use constitutes an insignificant item in his annual budget, this demand is not much affected by price changes either.

The conditions of supply likewise present obstacles to a quick response to price changes. Insofar as the output of wild rubber is concerned the number of trees available for tapping is more than adequate, but these trees are of tropical habitat and to collect the rubber there would have to be employed native labor of these regions, whose sluggish response to economic incentives is notorious. Once the rubber culture has been established on a commercial basis, however, the long-run adaptation of supply to the price inducements offered by the market becomes feasible. But the expansion and contraction of rubber supply in response to price movements is still subject to retarding factors which have tended to make an unregulated rubber market exceptionally erratic. The basic difficulty in adjusting the output of plantation rubber to the market arises from the fact that a rubber tree requires about 7 years after planting to mature. Thus, embarking on cultivation is a highly speculative commitment. What the market conditions will be when the product becomes available is more a matter of guesswork than of foresight. Furthermore, the labor and capital "sunk" in a rubber plantation represent a considerable investment by the time the trees reach full productivity, and there are no alternative uses to which such a plantation can be shifted without sacrifice of virtually the entire investment. It is obvious that in these circumstances a planter will "think twice" before abandoning rubber cultivation in reaction to a declining market.

Some adaptation of supply to a "short-run" depression in the market may be effected by less frequent tapping of the trees, but resort to this expedient is hampered by the necessity of maintaining the labor force, and in any event there are financial limitations upon a policy of foregoing present revenue in favor of prospective revenue. This latter consideration places still more rigid limitations, of course, upon the simple expedient of withholding supplies from the market after the rubber has been produced. The prospective trend of prices is always uncertain and the uncertainty is enhanced in the measure that the market is being supported by nothing more dependable than a prudent resolve of the several planters, each acting independently, to husband his resources in anticipation of "a better day."

The combination of an inelastic demand and an inelastic supply of rubber creates a powerful tendency toward extremely wide fluctuations in price. This is abundantly illustrated by the history of rubber prices in the first two decades of this century. The uses of rubber in 1900 were still relatively unimportant. Thereafter the demand exhibited an enormous secular increase with the revolutionary changes in transportation associated with the automobile. Net world exports of rubber increased from 44,000 long tons in 1900 to 400,000 in 1919. But even this expansion of exports by the producing areas was, particularly in the period 1900–10, inadequate to keep pace with the rapid expansion of demand. As a result the price of rubber soared phenomenally, reaching fully $3 per pound in 1910. This enormous price rise in turn brought a rapid increase in plantings, but the expansion of supply lagged for reasons

Digitized by Google

already mentioned. The subsequent rapid decline in rubber prices to around 55 to 75 cents a pound in 1915 mirrored the tardy fruition of the heavy plantings induced by the price boom. This price range, was, however, still extremely remunerative, and the profits earned by the Far Eastern plantations, which by 1917 had almost completely eclipsed wild Brazilian rubber in importance, remained high. In the next 5 years it was the inelasticity of demand in the face of this greatly expanding supply which was responsible for extreme price fluctuation. The dearth of shipping space after the middle of 1917 resulted in a considerable accumulation of stocks in Far Eastern areas; their release after the war, coupled with the 1920 recession, to which supply was completely incapable of adjusting, brought prices down to around 16 cents per pound, or only 5 percent of the 1910 boom price.

Such conditions of market instability provide good breeding grounds for schemes for "collective security." In the circumstances, relief was sought through concerted control measures, and the history of the rubber market for the next two decades is largely concerned with the ups and downs of restriction devices and restrictive policies. That they did not develop earlier is probably attributable to the great secular rise of demand. Now, however, the major problem of the industry became one of preventing supply from continually outstripping demand in such a fashion as to jeopardize the profits of the rubber producers.

A market characterized by an inelastic demand is subject not only to enormous downward price fluctuation; it also offers additional incentive for exploitation by monopoly, since high prices will not bring a proportional diminution of sales. It cannot be doubted, therefore, that the exploitation of the consumer as well as mere beneficial price stability was an additional incentive.

Political as well as strictly economic factors also helped to mold the pattern of rubber controls. Ninety-seven percent of the world's rubber supply has been, since 1930, produced in British Malaya and the Dutch East Indies. One-half to three quarters of the world's total production, on the other hand, has been consumed by the United States. Mr. Winston Churchill, who was at the time of the institution of the first rubber restriction plan the British Colonial Secretary, is reported to have declared that "one of the principal means of paying the debt to America is in the provision of rubber." Manifestly one consideration behind rubber restriction was to make it possible for Britain, which was to have difficulty all through the 1920's in meeting its international obligations, to obtain some additional, badly-needed dollar exchange.

Clearly, so geographically concentrated a source of supply is particularly susceptible to monopoly controls. The incentives for such controls were extremely great, apart from the instability of the rubber market. On the one hand the stake of British and Dutch interests in the Far Eastern rubber was tremendous. Well over half of the entire rubber acreage in the Far East at the end of 1940 was estimated to be owned by a large number of foreign companies, the majority of which were incorporated in Great Britain or Holland, and the shares of which were usually quoted on the London and Amsterdam Security Exchanges These foreign-owned plantations operated under many handicaps in comparison with the native plantations. A heavy capital investment, heavy continuing overhead costs for supervisory personnel and other executives, heavy initial developmental costs, and the necessity of paying continuous dividends to absentee shareholders if the market prices of the investments were to be maintained all put a burden upon the large foreign-owned plantations which the small scale native producer, employing his own land and labor, did not have to meet. An additional factor creating a vested interest in the maintenance of the status quo was the system of management of these plantations by large agency firms with a strong interest in retaining the business of all the large plantation owners, both high and low cost. With their generally higher costs, with their sophistication in matters of restriction and market controls, with the unifying influence of the agency firms, it is no wonder that the large foreign plantation owners have in the past pressed for restriction schemes in rubber much more vociferously than the generally small unorganized native producers.

THE STEVENSON PLAN

The immediate occasion for strong advocacy of rubber restriction was the sharp break in prices in 1920. The Rubber Grower's Association, a voluntary group composed of plantation companies, with headquarters in London, promptly

Digitized by Google

called for a 25-percent restriction of output for 1 year beginning November 1, 1920. Although this voluntary restriction had some success, the brightening of the American business outlook toward the end of 1921 and the rise of the price of rubber from the low of 16 cents in 1920 to over 30 cents defeated all efforts to have it renewed. The association appealed to the Government for its intervention to compel curtailment, and on October 24, 1921, the Secretary of State for the Colonies appointed a committee to formulate a plan of compulsory restriction. This became known as the Stevenson Committee, from the name of its chairman. The composition of this committee, is significant. Lord Stevenson was the personal commercial advisor of Winston Churchill, then Secretary of State for the Colonies. It seems fair to assume that he, together with the two other subordinate cabinet representatives on the committee, was motivated by considerations of appropriate imperial policy—to maintain the value of these investments and prevent forced sales to American tire manufacturers, and, as has already been suggested, to provide Britain with sufficient dollar exchange to pay her obligations to America. The five nongovernment members of the committee were connected with the London agency firms that have already been described and were directors of large Malayan estates. As such they were interested in maintaining the relative position and the profits of the high-cost British-owned production, which could only be done by restricting competition. The committee as a whole therefore, had a common outlook, for its economic and political motivations coincided.

After 6 months of deliberation during which the Committee approached the Dutch Government with a view to securing its cooperation and received no definite encouragement, a report was made on May 19, 1922, outlining two alternative procedures. One was to restrict production (the actual tapping); the other was to restrict exports by imposing heavy taxes on shipments above stipulated amounts, the export quotas to be adjusted to the market prices of rubber. The Committee counseled against the adoption of either scheme however, unless the cooperation of the Dutch could be enlisted. When further representations to the Dutch Government proved futile, the Stevenson Committee resumed its deliberations and, upon the urgent solicitation of the Rubber Growers' Association, finally on October 2, 1922, in its second report, disregarding its own earlier advice, recommended the adoption of the second alternative scheme outlined in its previous report. By bills rushed through the colonial legislatures the Stevenson plan became law on November 1, 1922.

The basic features of the plan adopted were (1) that production quotas (called standard assessments) were assigned the several plantations and negotiable permits issued quarterly for exportation, without tax penalty, of a certain percentage of the assigned quota and (2) that the permissible (or licensed) exports for any quarter were regulated automatically by the average price of standard crude rubber (in the London market) for the preceding quarter. Thus, the discretionary power of the administrative authorities was limited, in effect, to the establishment of the standard assessments. These were supposed to be based upon the actual output in the year ending October 31, 1920, but since adjustments were sanctioned to take account of various special circumstances, most notably of plantings reaching maturity subsequent to the base period, the discretion of the assessors, committees of planters and civil authorities, was rather wide. As a result, the life of the Stevenson plan was marked by continuous controversy between the various colonies, districts, and individual producers, between large and small, corporation, and native-owned estates, each seeking larger assessment at the expense of the other.

From the standpoint of market consequences in the short run, the Stevenson plan was a great success if its objective was to increase the profits of the rubber plantations. On the other hand, if the sponsors and proponents of the scheme intended to stabilize rubber prices, or regularize the rubber market, it was a dismal failure.

Quite apart from any consideration of the question of the economic justification for the adoption of 15 pence, roughly, 30 cents, as a pivotal price for crude rubber, so rigid were the mechanics of the scheme that the adaptation of exportable supplies was almost certain to be tardy in response to any major swing of demand. And no provision was incorporated in the plan designed to anticipate, and thus in some measure to iron out fluctuations in demand. The consumers' interests insofar as American rubber manufacturers are concerned (and they were then taking a full 75 percent of total world exports, a share which has latterly declined to about half of the total) were neither represented nor consulted. A rapid rise of

Digitized by Google

demand in the years 1924–25 as a result brought but tardy and inadequate adjustments of supply, and the price soaared to $1.23 per pound in July 1925.

Not all of this spectacular advance in the rubber market is traceable to the arbitrary constriction of supply, of course. There were important factors on the demand side of the market operating to boost prices, also. Aside from the influence of general business recovery both in Europe and America, which was tied up with a boom in the automobile industry in particular, there was a specific technical development tending to spur the demand for rubber. This was the introduction of balloon tires, which increased rubber consumption per tire by some 30 percent. Nevertheless, such considerations do not mitigate the force of the criticism of the Stevenson plan on account of its rigidity and its failure to provide for the representation and assertion of the principal consumer interests (American) as an integral part of the controll mechanism set up. For it was precisely the incapacity of the scheme to meet such conjunctures and moderate their market-disturbing effects which constituted its basic weakness, if judged by standards of economic stabilization and social planning.

A vehement agitation was provoked in consuming countries, and especially in America, against what was denounced in nonofficial quarters as a sheer hold-up. As a belated answer to these protests, for the quarter beginning February 1, 1926, an increase from 85 to 100 percent of allowable exports was authorized in place of the 10-percent increase which would have been mandatory under the plan without amendment. But this token of penance was not all sugar; it was a sugar coating for a pill of quite different taste. For accompanying the authorization of an extra allowable there was a change in the general provisions governing adjustments which raised the pivotal price nearly 50 percent, from 15 to 21 pence. In spite of this revision of the scheme which resulted in a reduction of the rate of permitted exports to 60 percent by May 1, 1927, and held it at that level for the last year and a half before repeal of the legislation, the market price continued steadily to decline.

The principal factors responsible for this diminishing efficiency of the restriction scheme (apart from the "psychological" influences on the market in the latter stages of its operation, for anticipation of its early demise) and for its final abandonment in 1928 may be summarily reviewed. These factors were of three distinct types. Ranked in the order of their probable measure of influence, they were (1) the growth of rubber production outside the restricted areas; (2) the development of substitutes for, and economies in the use of, crude rubber in consuming countries; and (3) defection and smuggling among those subject to the restrictive scheme.

In the period 1920–27 the share of the British Colonies in the world rubber market declined from 66.2 to 53.0 percent; the share of the other Far Eastern producers, mostly Dutch, rose from 23.0 to 39.8 percent in the same period. Here was a shift in commercial power which the British could not ignore. Of similar significance to this, from the British viewpoint, portentous development was the initiation of plantation projects by American rubber manufacturers in other areas, most notably by Firestone in Liberia. These enterprises had no immediate effect upon the statistical position of the market during the period in which the Stevenson plan was in operation; indeed, for a variety of reasons they have contributed little to world supply to date. But they were a signal emphasizing the import of the Dutch East Indian expansion—if that needed any underscoring.

The development of substitutes for crude rubber was spurred both by the high price of the natural product and by the arbitrary manner in which it had been brought about. The enormous rise of rubber prices was undoubtedly an important stimulus to the renewal of research in synthetic rubber both in the United States and Germany, which laid the basis for its production in the 1930's.

Another, and in the immediate conjuncture far more important, substitute for crude-rubber imports was reclaimed rubber. The expansion of the rubber-reclamation industry in the United States reached its peak in 1928, the last year of restriction under the Stevenson plan. The ratio of reclaim to crude rubber used in the United States rose from a low of 19.1 percent in 1922 to 50 percent in 1927 and 1928. While prior to the present emergency this scale of rubber reclamation was not maintained, the proportion of reclaim to crude rubber absorption has displayed a remarkable degree of correlation with the price of the imported crude. Thus the percentage declined to 21.2 in 1933, with the severe fall in crude-rubber prices, and increased steadily with the subsequent rise of crude prices, to 32.1 in the first 10 months of 1941, except for a break with the decline of crude prices in 1938. However the experience gained in use of re-

Digitized by Google

claim in rubber mixes evidently resulted in a permanent increase in its use. The fact that, as the price of crude rubber fell from 1928 through 1931 until it averaged slightly more than 1 cent per pound higher than the prime grade of reclaim, the proportion of reclaim to crude used fell only from 50.7 to 35.1 percent, may have been due, in part, to inertia. But it is noteworthy that in the last 6 years (1936–41), when the average price of rubber was lower than in the 4 years from 1921 to 1924, the proportion of reclaimed rubber used was considerably higher than in the earlier period.

The third factor impairing the efficacy of the Stevenson restriction scheme and contributing, in however minor a measure, to its eventual abandonment was the persistence of smuggling, and the development of discontent and disharmony among the planters, the latter growing out of jealousies kindled by allegedly inequitable "assessments" (quotas), out of evidences of official corruption, and out of divergent views on restriction policy.

These several factors all operated along with the attendant progressive deterioration in British-American relations, to persuade the British Government in 1928 that continuation of rubber restriction, at least upon an independent (British Empire) basis, would be a mistake. Hence the plan was abandoned in that year.

THE INTERNATIONAL RUBBER REGULATION AGREEMENT

The end of production controls, the drastic decline of the demand for rubber in the great depression, and the fruition of the plantings of the prosperous mid-1920's made the depression of rubber extremely severe. Despite an attempt to secure a "tapping holiday" in May 1930, world stocks accumulated at an alarming rate, world exports contracted only from 863,000 to 708,000 tons between 1929 and 1932 and were back at the 1929 level in 1933—and prices cascaded from an average of 20.48 cents per pound in 1929 to 10.24 in 1930 and 3.43 cents in 1932. By 1933 even the Dutch were ready to consider concerted measures to counteract the depression.

Negotiations begun in 1933 resulted in an intergovernmental agreement of May 7, 1934, between the Governments of the United Kingdom, India, The Netherlands, France, and Siam. This agreement was renewed in October 1938, to run for an additional 5 years. In it basic quotas were assigned to each of the nine rubber-producing areas into which the territories of the five signatories were divided. On the basis of these quotas were fixed the voting powers of the various delegations, which constituted the administrative body, the International Rubber Regulation Committee (hereinafter I. R. R. C.). The committee was empowered to fix periodically a percentage of the basic quotas, to which each of the signatories undertook to limit its exports for the period specified. Production control was provided by prohibiting the accumulation of surplus stocks within the areas as well. In addition, new plantings were with minor exceptions prohibited during the period of the pact.

Not only was production by the agreement areas restricted, but in addition the export of "leaves, flowers, seeds, buds, twigs, branches, roots, or any living portion of the rubber plant that may be used to propagate it" was prohibited. If this provision is reminiscent of the restrictions on exports of machinery, or emigration of skilled labor which were widespread in the civilized world until the eighteenth and nineteenth centuries, and were until fairly recently considered relics of barbarism; if it prevented the free flow in international commerce of goods and ideas whereby the wealth of the world is supposed to be maximized; it has nevertheless always been one means of varying effectiveness, of reinforcing national monopolies, and it cannot be denied that it serves at least the short-run interests of the monopolist.

The international rubber-restriction scheme had several superiorities over its predecessor of the 1920's, from the point of view of the parties thereto. First, and most important, it covered over 95 percent of the world's producers and thus overcame the fatal weakness of the Stevenson plan. Its control of production was stronger, by the prohibition of new plantings, and of the accumulation of nonexported stocks, and the growth of competitive production in outside areas was restrained by the prohibition on exports of seeds, etc., mentioned above. In addition, the mechanism provided was more flexible. The I. R. R. C. was given discretionary power to control the amounts of rubber exports directly and of production, indirectly. There is no rigid scale of percentages of the basic quotas related to average market price to hamper the administration of the scheme, as there was under the Stevenson plan.

The international rubber regulation agreement was presumably guided by a socially more acceptable standard than the price objectives which had served

Digitized by Google

as a guide for the operation of the Stevenson plan. The objectives of the agreement were said to be the attainment of a normal figure of world stocks, an orderly manner of adjusting supply to demand, and a price both "fair and equitable" and "reasonably remunerative to efficient producers." General agreement with respect to such broadly stated objectives, however, did not succeed in eliminating the basic economic conflicts and sources of friction that have been mentioned in connection with the Stevenson plan. The directorate of the committee was still largely dominated by representatives of the agency firms, who had a vested interest in maintaining existent production rather than encouraging the displacement of inefficient by efficient production. The freezing of quotas and exports operated to the detriment of low-cost native producers, in that it deprived them of what would otherwise be a competitive advantage. While competition would have eliminated the high-cost producers, the restriction schemes had the effect of holding a price umbrella over them.

The objective of the scheme was to raise and maintain remunerative prices by restricting exports and reducing stocks which had grown so greatly during the depression. It succeeded. The combination of restriction and world recovery raised the price of rubber to a peak of 25 cents a pound in March 1937—100 percent above the price prevailing when it first went into effect. Such results certainly demonstrate effective market control—at least in the short run. The sharp decline in world consumption in 1938 was met by a drastic reduction in the permissible exportable percentage, from 90 percent in the latter half of 1937 to exactly half, 45 percent, 1 year later, with the result that stocks continued to decline. The price nevertheless fell substantially to 16.4 cents in the last quarter of the year—but this was still 25 percent above the 1934 level.

The rubber market was practically dominated by the war in the years 1939, 1940, and 1941. The I. R. R. C. cannot be said in the circumstances to have seriously altered either its point of view or its generally conservative policy. On the contrary, the committee evinced a disposition, if not to maximize the immediate revenue-yielding potentials of its strategic position, certainly not to forego any profit-making prospects within the limits imposed by a prudent regard for self-interest. The proportion of permissible exports to basic quotas was held to 58.75 percent in 1939, and to 83.75 percent in 1940. It was not until the growing danger of rubber exports being curtailed by enemy action became apparent even to the man in the street that these self-imposed market-supporting restrictions were abandoned in 1941. This, despite the fact that the threat to an uninterrupted rubber supply for the American market had become so menacing that in June 1940 the Reconstruction Finance Corporation had organized the Rubber Reserve Company and embarked on a large-scale purchasing program. The market price rose steadily to a level in May 1941, practically the same as the peak reached during the boom 4 years earlier. Thereafter, thanks mainly to the intervention of Rubber Reserve, which on June 21, 1941, became the sole importer of crude rubber, the price was stabilized.

The question will inevitably arise as to the extent to which America's inadequate accumulation of a natural rubber stock pile was attributable to the operations of the I. R. R. C. The evidence is certainly not clear, and certainly the American authorities cannot be said to have been particularly far sighted or forceful in the entire affair. Nevertheless the following facts should be noted:

1. In the barter agreement of 1939 between Great Britain and the United States, this Government acquired 90,000 tons of rubber only with the stipulation that, barring an emergency, none might be put on the market for 7 years.

2. The same limitation was placed upon the Rubber Reserve Company in its agreement of June 1940 with the I. R. R. C., whereby it acquired its first 150,000 tons—except that the expiration of this limitation was set for 1943. However, in 1943 and after the rubber to be released by Reserve was restricted to 100,000 tons annually.

3. The permissible exportable portion of quota output averaged only 84 percent in 1940, and was not raised to 100 percent until 1941. By that time shipping difficulties and the Japanese took over the task of keeping America unprepared.

4. The prohibition against export of seeds, etc., from the superior Indonesian strains may well have prevented a more rapid increase of production elsewhere.

The evidence suggests thus that by the narrow pursuit of its own interests the I. R. R. C. may have contributed somewhat to American unpreparedness. Nevertheless the major portion of the blame, it would appear, can scarcely be placed at their door, if indeed it can be placed anywhere. Had the responsible American officials been able to foresee the dangers (and it by no

Digitized by Google

means necessarily follows that it is reasonable to expect that they should have) and had they acted forcefully, any obstacles created by the I. R. R. C. could doubtless have been eliminated. Nor is there evidence that in fact the obstacles were serious, that it was the export quotas which prevented the acquisition of an ample stock pile. And if the restrictions placed upon the ability of Rubber Reserve to dispose of the rubber, except in emergency, could not have been swept away by a strong American stand, it still should not have prevented the accumulation, which was precisely for such emergency use. Finally, as to the prohibition on exports of seeds, etc.: However reprehensible in principle, it can scarcely be believed that it prevented any substantial rise of rubber culture, elsewhere. In view of the almost negligible rise of competitive non-Asiatic rubber-producing areas during the 1920's when the price passed $1 a pound, and when the export of seeds and shrubs was uncontrolled—it is difficult to argue convincingly that were it not for this restriction, there would have been such an increased competition in the thirties, when the price reached only 25 cents a pound.

On the whole, it must be conceded that the I. R. R. A. plan has operated less perversely as a market "stabilizing" device than did the Stevenson plan. There have been no such violent price fluctuations as those which attended the earlier scheme. Whether the course of the market as been more erratic than it would have been in the absence of "restriction," no one can say positively. It is possible that this explains the tolerant attitude of the American rubber manufacturers toward the domination of their raw material market by "outsiders" intent primarily upon serving their own interests. The attitude of the American consumer, however, deserves somewhat closer scrutiny. America has during the life of this second cartel taken some 50 percent of the latter's rubber exports. And four large American companies have consumed probably two-thirds of this total. Why have these industrial giants permitted this monopoly of their raw material supply?

Their inaction was undoubtedly attributable in part to their own stake in far eastern rubber. Aware of the danger of reliance upon a source of supply of raw material which they could not control and afraid of possible price squeezes to which they might be subjected, the tire manufacturers, with the exception of Goodrich, had stepped out and acquired rubber plantations for themselves. The values placed on the rubber plantations of Goodyear, United States Rubber, and Firestone amounted to 6 percent, 11 percent, and 12 percent, respectively, of the total values of those three companies. Analysis of the United States Rubber Co.'s financial statement for 1938 (when the rubber plantation company was consolidated with its parent) discloses that the United States Rubber Co. was making a 30-percent profit on its cost of producing crude rubber. Assuming that the other companies were making similar profits for similar reasons, the ownership of these large estates may have tended to give them an interest in the maintenance of the status quo in the Far East and in the operation of restriction schemes tending to support the price of crude rubber; they would hardly want to see an important investment depreciate in value or to be deprived of a steady source of profit.

However, their stake as consumers of rubber was far greater than as producers. The combined crude production of Firestone, United States Rubber, Goodyear, Ford, Raybestos-Manhattan, and the Intercontinental Rubber Co. amounts to a bare 6 percent of the yearly imports of crude rubber. No company has plantations to supply more of its crude rubber requirements than the United States Rubber Co., which obtains about one-fifth of its supplies from this source. The Firestone plantations in Liberia, those of Goodyear in the Philippine Islands, Panama, and Costa Rica, those of Ford in Brazil, and the guayule holdings of the Intercontinental Rubber Co. do represent definite efforts to establish sources of supply free from foreign domination, however. But these are only about one-sixth of the foreign rubber holdings of American companies, and Firestone and Ford are the only ones that do not also have plantations in British or Dutch territories in the Far East. Their acquiescence in the rubber restriction may therefore simply reflect their impotence. Or it may be a reflection of their conviction that, providing the foreign interests could be prevailed upon to take a long-run perspective, the jeopardy to the interests of American manufacturers (and consumers) would be minimized. In other words, they may have figured that the jeopardy would be less than it would be from the adoption of an antagonistic attitude backed up by vigorous efforts to develop alternative sources of supply. Besides the length of time (7 years) necessary

Digitized by Google

to obtain a return of capital sunk in rubber-growing, while perhaps not in itself a decisive deterrent, does tend to make less attractive undertakings which have to be carried on in far-distant tropical countries than would the same undertakings be if cultivation were practicable in politically more stable regions.

From the point of view of the manufacturers, a stable crude rubber price, even if relatively high, is more to be desired, assuming its stability can be maintained, than a lower range of prices which might be subject to somewhat more frequent fluctuation. They have not forgotten, it may be presumed, the severe inventory losses they have suffered on more than one occasion in the past. Proof of their interest in the stability of prices was the operation of a $40,000,000 buyers' pool from the end of 1926 to the beginning of 1928, formed by the leading tire and automobile manufacturers in order to keep the price of rubber from falling, and so to avoid inventory losses. Moreover, they are quite well aware, no doubt, of the high degree of inelasticity in the demand for most rubber products. The significance of this inelasticity of demand is that, so long as the several manufacturers pay the same price at the same time for their raw materials, it is of little concern to any of them whether that price be high or low.

Certainly one major weapon with which to combat a crude rubber monopoly, in addition to the increased use of reclaim, was the development of synthetic rubber. The major part of the story of synthetic rubber has already been discussed. It cannot be told completely, however, unless the influences of the natural rubber story are suggested. It will be noted, for one thing, that the Goodrich Co., which alone of the big four rubber manufacturers owns no foreign plantations, has led the others in experimentation with synthetic rubbers. These two facts cannot be unrelated. However, whether this means that it was their vested interests in natural rubber which diminished the desire of the others (except for Goodyear) to probe the possibilities of synthetic rubber, and made Firestone and United States Rubber willing to accept the Standard Oil contracts which in effect reserved the buna for high-cost specialty uses, or whether it was Goodrich's faith in the synthetic product which made it unwilling to invest in natural rubber plantations—cannot be said without further evidence.

Again, evidence before this committee has already indicated that I. G. Farben was considering selling its patents for the production of synthetic rubber to the I. R. R. C., clearly understanding that the latter's sole interest would be in purchase for the purpose of suppression. It must be stressed that if I. G.'s motives in such a transaction would have been the further retardation of American production of synthetic rubber, those of the I. R. R. C. would only have been considerations of commercial expediency. The point is, however, that the latter may have proved just as dangerous to American security as the willful economic aggressions of I. G. Farbenindustrie. Whether actual negotiations in this proposed transaction were ever undertaken, whether the I. R. R. C. ever even knew of the possibility, cannot be stated. The possibility remains significant. It is perfectly clear that wherever possible, these interests would, naturally, counsel against the exploitation of the possibilities of synthetic rubber; certainly they would have been pleased with the American Government's policy, until 1941, of concentrating on the accumulation of a large stockpile of natural rubber, rather than of risking many millions "uneconomically" in experimental synthetic rubber plants.

On the other hand the possibilities of synthetic rubber must have placed some limits on the policy of the I. R. R. C. in the thirties, and helped maintain reasonably high export quotas, and correspondingly reasonable prices. The intensity of industrial research in synthetic rubber, as the amount of reclaim used in proportion to crude, has fluctuated in close correspondence with the price of natural. Although the World War and the preparations therefor were doubtless an important factor, to the enormous rise of rubber prices after 1900 must be attributed in large measure the first great wave of industrial research in synthetic rubber, mainly in Germany. The great price fall after 1920 was in turn largely responsible for a corresponding decline in this research, to which the end of the war contributed, and the great price rise to 1925 for the considerable revival of interest in Germany and the United States in the middle twenties. Again, to the successful price record of the I. R. R. C., after 1934, must be attributed some of the great interest of the Goodrich and Goodyear companies in obtaining buna licenses or developing their own rubbers. If only the industrial arts were freed, such natural monopolies as rubber would

84949—43—pt. 4——20

Digitized by Google

enjoy a much more restricted margin for playing fast and loose with the hapless consumer.

The problem of rubber in the post-war world will be a serious one. Much will depend upon the extent to which the technical promise of synthetic rubber will be fulfilled. It may be that the political problem of geographically concentrated supplies of raw materials may be automatically solved, by the march of science, which it will have taken a war to free from the restrictions placed upon it by private interest. It may be, however, that a more efficiently run plantation system will still be the most economical source, in which case much will depend upon the commercial policies adopted by the major consumers, and synthetic producers. The United States will have to strike a more even balance between the various considerations of military security, and international economic and political stability than it has in the past. And a decision will have to be made concerning the place of the international cartel, while considering on the one hand the rights of the consumer and the Nation, and on the other the inescapable quest of labor and capital for security in such an inherently insecure situation as the play of free competition would leave the rubber producer. There is no simple choice between black and white, good and evil, personal integrity or treachery. It would be so simple if it were! Nevertheless certain dangers which our present predicament has brought to light, and which this study has attempted to describe, must be prevented from recurring when the interests of national security are less obvious, and less sedulously safeguarded than they are at present.

EXHIBIT No. 139

PATENT POOLS, STANDARD OIL CO.-I. G. FARBEN

Statement by Patrick A. Gibson

I appear in response to the subpena of this committee with the task of presenting the patent pooling arrangements between Standard Oil Co. of New Jersey and I. G. Farbenindustrie, of Frankfort am Main. I shall attempt (1) to present a more detailed picture of the basic 1929 and 1930 agreements and (2) to trace, in the field of oil refining, the principal industry-wide patent agreements that have stemmed from the basic allowances between Standard and I. G.

On November 9, 1929, Standard and I. G. executed four separate instruments, by which the parties clothed with a constitution an alliance arrived at between them. In substance, Standard agreed to refrain from going into any chemical business in the future except as a "junior partner" of I. G. and under I. G.'s domination and control. In turn, I. G. agreed to remove itself from and stay out of the oil industry except in Germany.

Testimony on the subject of acetic acid, the Paraflow products, the methane steam process, and the synthetic rubber patents have shown arresting instances of the critical impact of the 1929 agreements upon the American economy today. We thus turn back to 1929 not for study of ancient history but for an understanding of the 1940's.

This committee has already inquired into some of the particular consequences of the 1929 agreements on the American chemical industry. The field of oil refining remains for more particular study. The basic agreements and the many deals and patent pools that followed in this field are signal instances of the use of patent agreements to carry out commercial understandings in suppression of competition and to acquire and perpetuate industrial control and economic advantage. Since 1929 they have operated within the United States and throughout the world. Yet only recently has the Government of this country obtained knowledge of the facts. Let us look at the nature and office of this contractual network.

BASIC AGREEMENTS BETWEEN STANDARD AND I. G.

Their purpose.—In the negotiations leading up to the interdependent basic agreements between Standard and I. G., the president of I. G. characterized their objective as follows:

Digitized by Google

"As Dr. Bosch now saw it, the only solution would be to consider that the two companies were married for a long period and that each must respect the other's interest; that a real solution could be found only by realizing that the I. G. interest and the S. O. interest were the same, and that whatever Standard did would react to the interest of the I. G. as well" (exhibit 1).

The agreements were characterized by the president of Standard, Walter C. Teagle, as follows:

"Teagle stated that it is the sincere desire of N. J. to form a close association with I. G. on all world problems of mutual interest; that he appreciated the many difficulties now existing, but that he cannot see how the interests of the two companies can conflict" (exhibit 2).

E. M. Clark, president of Standard Oil Development Co., Standard's patent exploitation subsidiary, stated that Standard was interested in:

"Complete partnership in everything—ironing out in the spirit of friendship the little troubles that will arise from time to time" (exhibit 3).

The circumstances attending consummation of the treaty between Standard and I. G. and the purposes pursued and methods adopted were broadly stated in the following minutes, which are so fully informative that I quote at length:

"Memorandum of meeting—March 21, 1929

"*Place.*—Board Room, New York City.

"*Present.*—Messrs. Bosch, Gaus, Schmitz, von Knieriem, of the I. G. Teagle, von Riedemann, Clark, Howard, Haslam, of S. O.

"Dr. BOSCH opened the meeting by reviewing our discussions at Heidelberg and their objections to our proposition of last summer. With respect to our recent proposition, he stated that the I. G. were willing to discuss it but the following points were not clear:

"1. The fields of the two companies should be kept separate. The I. G.'s primary business is synthetic organic chemicals, while the field of the Standard is petroleum. If an agreement is reached taking the I. G. out of the oil business, except in Germany, it should be possible to clearly define the fields of the respective companies. * * *

* * * * * * * *

"Dr. BOSCH then discussed point No. 1 above. He stated that it was his impression that the Standard was only interested in the petroleum business. The I. G. would now withdraw from this field, except in Germany, and, to avoid future conflict, thought an understanding should be reached so that the Standard would not go into the chemical field (such as dyestuffs, ammonia, etc.) in competition with the I. G. He appreciated that we were in the solvent business and stated that the I. G. were willing to go along with Standard in this field, but felt that the leading factor in this field should be the I. G.

"Mr. VON RIEDEMANN asked Dr. Bosch if he did not think that the Standard would be driven into the chemical field due to the similarity of coal and oil as raw materials for the hydrogenation process.

"Dr. GAUS stated that hydrocarbons had a big future in the chemical field for the I. G. If a complete deal is made between the two companies, the Standard would become acquainted with the I. G.'s chemical processes, and this might bring the Standard and I. G. into contact in this field, without an agreement, and competition might develop between the two companies.

"Dr. BOSCH replied, in answer to Mr. von Riedemann's question, that he expected the Standard would be driven into the chemical field and that the two companies should lay their plans accordingly.

Mr. VON RIEDEMANN stated that Standard's thought in the matter was that our coal and oil agreement with the I. G. should be in two parts: (1) Covering the United States, and (2) covering the rest of the world, except Germany.

"He pointed out that Sir Henri Deterding would be in on the second part, and suggested that, to help Standard, the I. G. put a fair division of the price we are to pay on these two divisions of the agreement. The question of our position in the chemical field should be considered in the U. S. portion of the contract.

"Dr. BOSCH replied that it was not to the interest of the I. G. to separate the fields, and asked if the fact that the Shell interests had gone into the ammonia field was one of the reasons prompting Mr. Riedemann's suggestion.

"Mr. VON RIEDEMANN replied in the affirmative.

Digitized by Google

"Dr. BOSCH stated that the I. G. were willing to take the Shell into the ammonia field to a small extent, as the field should be big enough to include both.

"Mr. Teagle, to explain further Mr. von Riedemann's suggested division of the contract, outlined our relation to the Shell in this matter, as follows: After our conference last year we went to Sir Henri Deterding and stated that, if we made a world agreement with the I. G., we should hold the door open to him, except that Germany was withheld for the I. G. and the U. S. withheld for the Standard. The I. G. are the only ones who can really appraise the relative value of their patents in the U. S. and the rest of the world outside of the U. S. and Germany. Also, our membership in the so-called "Patent Club" was pointed out as an additional reason for such a division.

"Mr. VON RIEDEMANN explained the T. I. J. contract very briefly.

"Mr. HOWARD pointed out that we were already interested in chemical and pharmaceutical specialties, such as NUJOL and FLIT, on the one hand, and solvents, on the other hand, and that we have carried out extensive research and development work in the solvent field.

"Dr. BOSCH stated that he had reference not to our present activities but to future developments. He explained their agreement with the Winthrop Chemical Co., which is to sell I. G. products. With regard to solvents, he stated that I. G. were very much interested and would like to come together with us. He stated that he desired to prevent our competition in colors, pharmaceuticals, etc., with particular reference to new products, and explained in confidence certain developments which they had already undertaken. In the matter of these new developments, he wished the management and dominant interest to be in the hands of the I. G. He stated that it was the policy of the I. G. not to go into old fields already occupied but to create new industries and new fields, that the I. G. did not wish to go into competition in the U. S. with the U. S. chemical industry. * * *

* * * * * * *

"Dr. BOSCH stated that what he wanted was a declaration of policy covering the whole world and that it could go in the U. S. coal and oil agreement, if desirable, but he did not want to have to negotiate a new agreement later on.

"Mr. HOWARD pointed out that it could not go in our present proposed agreement, since our agreement must be shown to others, and inquired whether Dr. Bosch wished us to agree not to go into the chemical business except as a junior partner.

"Dr. BOSCH stated that in their chemical work they would extend to us an invitation to come in with them, as no other company would be so satisfactory to the I. G.

"Messrs. BOSCH, TEAGLE, VON RIEDEMANN, and CLARK all felt that a written, rather than a verbal, understanding on this was desirable.

"Mr. TEAGLE stated that we were willing to be junior partners in the chemical field provided our minority interest was sufficiently large.

"Dr. BOSCH replied that they would offer us 49%. * * *

* * * * * * *

"On reconvening, Mr. TEAGLE stated that Dr. Bosch's suggestion at Heidelberg that Standard take over the entire coal-oil process outside of Germany did not provide for I. G.'s continuing financial interest, which Standard considered to be highly desirable, and consequently Standard proposed that Shell, Standard, and all others would have to pay the same 2¢ per barrel royalty" (exhibit 4).

Nature of agreements.—By the first of these agreements, referred to as the division of fields agreement (exhibit 1), I. G. agreed that should it wish to go into a new chemical development anywhere in the world, outside of Germany, that could not be carried on except as a department of the oil and gas business, I. G. would give Standard control. I. G. further agreed that if it were to go into a new chemical development not so closely related, but nevertheless related, to Standard's oil business, it would offer Standard a substantial, but not controlling, interest in such enterprise. Standard, on its part, agreed that if it should desire to enter a new chemical business anywhere in the world not closely related to Standard's then business, Standard would offer the controlling interest in the new chemical development to I. G.

Thus, as from 1929 to at least 1947, the earliest date at which the agreements could be terminated by the parties, the largest industrial corporation in the United States surrendered its freedom of action in the chemical industry into the hands of the largest industrial corporation in Germany. Scarcely even sin-

Digitized by Google

cerity can attach to the recently publicized argument that this renunciation of liberty of action in the chemical industry by Standard was only natural for an oil company, since as early as 1928, almost 2 years prior to the execution of this agreement, an official of Standard wrote:

"The petroleum industry is rapidly becoming a chemical industry and has, of course, available to it the largest supply of raw material, both in its natural gas and crude oil. Looking to the future, it is evident that the manufacturing and marketing interest of the large refining companies will clash with the large chemical companies" (exhibit 5).

At the present time the place of an oil industry in chemical production has been made perfectly plain. Now that Standard has been driven into the chemical field by the absolute compulsion of war itself, it advertises and takes credit for the fact that large amounts of petroleum are being processed into chemical products for vital war needs.

The Jasco agreement.—The Jasco agreement of September 30, 1930 (exhibit 6), set up a mechanism for carrying out the division of fields agreement. It is not one of the four basic agreements.

The Jasco agreement provided for the creation of a Louisiana corporation called Jasco, Inc.—Joint American Study Co. Its stock was issued 50 percent to Standard and 50 percent to I. G., but the rights to its control and to its assets and profits were governed by the agreement. It was stipulated that when either party should develop a new marketable chemical product, or a new process for making a marketable chemical product utilizing natural bitumen, gas, or petroleum, as raw material, the developing party should offer the other the right to require that it be brought into Jasco.

When brought into Jasco, the process would thereafter be developed by the joint company, and licensed or otherwise promoted by the corporation. The originator of the process would receive roughly five-eighths of the profits, the other party three-eighths. It has frequently been represented by Standard that the originator of any process that was placed in Jasco was entitled to the control of the licensing or other exploitation of such process brought into Jasco. On this point I simply quote from article 7 of the Jasco agreement:

"The parties shall try to come to agreement on all matters having to do with the handling of any chemical process brought to the Joint Company but in case of failure of agreement the decision shall rest with the party which would have been entitled to the control of the process under a certain agreement of November 9, 1929, between I. G. and Standard Oil Company (New Jersey) * * *" (exhibit 7).

Therefore, I. G. would control the exploitation of the process in all cases except the following: (1) If the process were originated by Standard but was closely related to Standard's business as of November 9, 1929; (2) if the process were originated by I. G. but could not be advantageously carried on except as a department of the oil or gas business. For example, under this agreement Standard incurred the obligation to give I. G. the right to require that Standard's butyl rubber development be brought into Jasco and its licensing and exploitation there controlled by I. G.

The four-party agreement.—By another of the basic agreements of November 9, 1929 (exhibit 8), it was I. G.'s turn to renounce to Standard the oil industry—outside of Germany. I. G. assigned and agreed to assign to a patent licensing company the exclusive rights to all of I. G.'s present and future patents useful for the production of major products of the oil industry—but only to the extent of and for the purposes of their use in the oil industry. I. G. also agreed to furnish all of its present and future information or know how for use in these processes of the oil industry, and Standard agreed to do likewise for I. G. for its oil operations in Germany.

The licensing company, called S.-I. G., was created as a Delaware corporation; 80 percent of its stock was issued to Standard and 20 percent to I. G. The rights in the company were governed, however, principally by the November 9, 1929, agreement and not by the stock interest. Each party had the right as stockholder only to receive its proportionate share in $11,000 of S.-I. G. net income and to enjoy a stockholder's voice in management. Management, however, as well as Standard's control by its ownership of 80 percent of the stock, was limited by the agreement.

As stated above, I. G. reserved to itself in all cases exclusive enjoyment and power of disposal of all rights in the patents in question for all purposes outside of the oil industry. To this end the agreement set up an elaborate definition of the hydrocarbon field. The example cited in the text of the agreement stated that

Digitized by Google

thus the pooled processes could be used "for the production of aromatic hydrocarbons and methanol * * * so far as these products are used as antiknock substances or as motor fuel. They do not come within the field when intended for use as raw materials for dyestuffs and explosives in the case of the aromatic hydrocarbons, or as solvents in the case of methanol" (exhibit 9).

The fact that the above agreement serves the commercial purposes of the division of fields agreement, rather than carrying out merely a patent acquisition, is further emphasized by its provision for future border-line cases. Standard and I. G. recognized that the definition of the hydrocarbon field might not be adequate to cover all situations that might arise, and that future processes might produce products falling both within and without the field. It was agreed that new allocations would be negotiated consistently within the spirit of the agreement. Here again the agreement covered not only processes and products already patented, but also new future developments of the parties.

Under the agreement S.-I. G. was the recipient not only of all of I. G.'s hydrocarbon field processes, but also of all of Standard's hydrogenation processes. Standard assigned these to S.-I. G. exclusively, for the world, outside of Germany, reserving to itself only operating rights. The hydrogenation patents of both Standard and I. G. for all purposes of the hydrocarbon field, but for those only, were thus combined in S.-I. G.

Standard transferred to I. G. 546,000 shares of its stock valued at approximately $35,000,000, upon the execution of these agreements (exhibit 10). The impression may exist that Standard paid this $35,000,000 for I. G.'s hydrogenation rights. In fact what it obtained, by this payment and by its numerous commitments with I. G., was its position under the agreements. Standard surrendered its freedom of action in the chemical industry but received protection from any competition with it by I. G. or any potential licensee of I. G. in the oil industry. It also obtained an immense advantage over competitors in the oil industry by having the patent and technical resources of the two great organizations joined in partnership

By the agreement, S.-I. G. bound itself to do no other business save that of granting licenses under patents coming within the hydrocarbon field, assigned to it by Standard or I. G. It bound itself to grant such licenses only in consideration of substantial royalties. Out of these royalties received, S.-I. G. was required to pay I. G. 20 percent of the gross (or, in the case of running royalties from hydrogenation, 2 cents per barrel when oil was used as the starting base and 3 cents per barrel when coal base was utilized) The net balance of royalties, after $11,000 in income paid to S-I. G., was payable to Standard. Standard itself, in spite of its payment of $35,000,000 for proprietorship of I. G.'s processes and an 80 percent share in the royalties, had to continue to pay running royalties for their use.

One result of this arrangement, which Standard used to the fullest advantage in its patent pool negotiations with other oil companies, was that, whereas Standard itself appeared to take licenses under S.-I. G. patents as any other licensee, Standard in fact received a rebate of approximately 80 percent of the royalties paid by it. This rebate, as well as its share and I. G.'s share in royalty collections from other licensees, were concealed from the industry. We shall see that Standard consistently kept secret not only its preponderant share in rayalties from I. G. patents, but also the very fact that Standard held the control of all of I. G.'s patents in the oil industry.

We have then, in large lines, a division of the chemical and oil industries between Standard and I. G., with the commitment for intimate combination and cooperation with each other in enhancement of their joint interests so divided. We have seen, however, that Germany was set apart. In Germany, I. G.'s freedom of action was in no way restricted. In passing, we may observe that this respect for national development was not reciprocal. Standard was not saved the like freedom of action in the United States. Standard's renunciation of its future freedom of action in the chemical industry was world-wide, including the United States.

German sales agreement.—There remained, however, Germany. Both Standard and I. G. were in the oil business in Germany. I. G. produced oil products synthetically. Standard refined some products in Germany and exported to Germany, and marketed there through its distributing system large quantities of oil products. Without an agreement covering these circumstances the two powers would not have ruled out for all cases the possibility of unrestrained competition. The union would then not be perfect. Furthermore, I. G. desired

Digitized by Google

a distributing organization at its disposal to give it an outlet in Germany for its synthetic production.

In answer to these needs we find the third of the four agreements (exhibit 11), called the German sales agreement. It presented a solution protecting each party, opening to I. G. an outlet for production and preserving to Standard its profit. I. G. agreed to deliver to Standard all of its production of gasoline by hydrogenation, to be marketed by Standard. Standard agreed to take and market all of such production by I. G. I. G. also agreed to favor Standard in all purchases of such imported crude oil as it should require. Thus the world-wide measure of common interest was filled out.

Coordination agreement.—It would seem that this was enough. There was, however, a fourth agreement (exhibit 12), already introduced before this committee, called the coordination agreement. In the language of high diplomacy and with the suggestion of a reliance upon a private law above the law, this agreement embodies mutual assurance by the parties to each other that they would voluntarily readjust their contracts to carry out their purposes in the event any obstacles were presented by existing or future law, act of governmental authority, or circumstance. This is only the barest effort to state the gist of the agreement, whose actual terms are next to impossible either to summarize or to characterize. That is best left to the text itself.

Let us add only the observation that thus in the basic constitution the parties asked and received cooperative assurances beyond the fixed terms of their contracts. Behind each of the patent agreements lies this indefinite and anomalous undertaking. Nor was the coordination agreement an isolated incident of 1929. Its terms were in existence as early as 1926. In connection with a particular patent agreement, that for hydrocarbon synthesis, it was reaffrmed as recently as October 1940.

The hydrogenation agreement of 1927.—It should be pointed out that by agreement of September 27, 1927, Standard had already acquired the right to license under I. G.'s American patents for the hydrogenation of oil (exhibit 13). What was added by the 1929 agreements was that Standard acquired proprietorship of the patents, that it acquired them for the whole world outside of Germany, that hydrogenation of coal—which has never been licensed or offered here—was added, and that Standard obtained the general agreements for suppression of competition between it and I. G. or I. G.'s potential licensees.

THE HYDROGENATION PROCESS

Having first looked at the full scope of the industry-wide agreements made between Standard and I. G. in 1929, let us now look at the hydrogenation process itself, what it was, and how it has been controlled.

Essentially, hydrogenation constitutes the subjection of hydrocarbons to heat and pressure in the presence of free hydrogen. In the reaction heavy hydrocarbons, such as coal and crude oil, combining many carbon atoms in the molecule, are broken into lighter hydrocarbons combining fewer carbon atoms in the molecule, and additional hydrogen atoms are introduced into these lighter hydrocarbons, and, as a result, products such as gasoline, more valuable than the starting material, can be manufactured. Catalysts of various types, such as nickel or aluminum compounds, facilitate the reaction, lower the necessary heat or temperature, or help determine the desired final product. Many of the patents developed for the process relate to the composition or method of use of the catalysts.

Hydrogenation, under the definitions of the agreements with I. G., also includes the combination of free hydrogen with carbonic oxide gases containing no hydrogen to form light hydrocarbons. This operation was later made the subject of an entirely separate pool, called hydrocarbon synthesis.

Use of hydrogen together with heat and pressure, with or without catalysts, was in later years found to have extremely beneficial effects in many refinery operations regardless that, contrary to the case of the original hydrogenation process, these later operations did not add free hydrogen to the final product. Hydrogenation thus led to many important modern processes simply by education in the use of hydrogen, heat, pressure, catalysts, or the several combinations of these factors. Among such developments were some of the modern methods for producing high octane gasoline, toluol for TNT, and butadiene for synthetic rubber. Developments throughout the field have been influenced by the hydrogenation agreements.

Digitized by Google

It is clear that the original importance of hydrogenation itself was this: The process was capable of converting coal into gasoline or any other oil products. It was also capable of converting crude oil directly into gasoline, 100 percent by volume, and of producing high-grade oil products from low-grade crude. It was the only process then feasible for carrying out these operations in all stages to the final product. It has unknown potentialities for the future. Its acquisition meant life insurance to Standard against depletion of crude. It meant protection to Standard against promotion of synthetic production by I. G. or licensees under I. G.'s processes as then existing or as might be thereafter developed. It meant protection to Standard against ventures into synthetic production in foreign countries where Standard marketed, by nationalistic governments seeking self sufficiency. It was acquired for these purposes and therefore at the outset is an example of the large scale use of patents for discouragement, and not encouragement, of practice of the inventions.

Hydrogenation had been discovered before I. G.'s developments. The basic principle was evolved before the last war by a German professor named Bergius, and patents had been taken out all over the world. After the war they were held in this country by the Chemical Foundation, transferee of the Alien Property Custodian. Abroad they were held by International Bergin Co., the controlling interests in which were held by I. G., Shell, and Imperial Chemical Industries (called I. C. I.) through various international shadow corporations such as Atlantic Binger Company and Makot (exhibit 13a). After the war I. G. developed numerous process, appliance, and catalyst patents covering the practice of hydrogenation and application of its principles, so that I. G.'s patents were necessary for practical use of the process. In this country, the Bergius patents were disregarded until suit was brought against Standard by the Chemical Foundation in 1935. It was settled by Standard in 1937 by the payment of $100,000 (exhibit 14). Abroad, however, Standard made sure to bring in all the Makot interests and thus to obtain control of the foreign Bergius patents from the beginning.

The patent story unfolding from the basic Standard-I. G. agreements now spreads into three classifications: (1) Hydrogenation in the United States; (2) hydrogenation abroad; and (3) subsequent oil patent pools.

Hydrogenation in the United States.—We have seen that, by the basic agreements with I. G., Standard acquired control of methods for synthetic manufacture of oil products. Nothing in the agreements committed Standard to license hydrogenation. However, Standard established a plan in the United States by which 18 major American oil companies received the right to hydrogenation licenses (exhibit 15). The plan adopted spread in this country the use restrictions of the I. G. agreements to cover the future operations of all these companies, and prevent development of hydrogenation for chemical purposes by the oil industry. It also obtained for Standard and I. G. all present and future developments in the field by the American oil industry. Frank A. Howard, in a letter to the Standard Oil Co. of California on May 26, 1930, summed up the plan of S.-I. G. in regards to the hydrogenation process in the United States by saying:

"In a few words, therefore, it seems to cover the oil business proper, present and future" (exhibit 16).

There is no question that Mr. Howard was counting upon the dominant position held by Standard Oil Co. (New Jersey) in the oil business to carry the plan through the initial stage because on January 27, 1930, he wrote to E. M. Clark of Standard Development:

"Kingsbury [Standard Oil of California] and Sutro arrived this morning and I had a brief discussion with them about the U. S. plan. The upshot of it is this: Kingsbury says frankly that he thinks the plan rather tough on him since, if used on a very large scale, it will result in very large royalty payments, the extent of which he cannot estimate at the present time, but that, in view of the potentialities of the process, he cannot justify staying out and therefore expects to come in. He says he believes that, if the other people speak with equal frankness, they will tell the same story and I think he is exactly right. All of these great companies are going to kick like steers at the prospect of paying any substantial running royalties. If they knew as much as we do about the prospects of the process replacing present cracking entirely, they might buck even more. My hope is, however, that they will all feel just as Kingsbury does, i. e., that they cannot afford to be left out" (exhibit 17).

Mr. Henry L. Doherty, president of Cities Service, wired to Mr. Howard after he had considered the plan:

Digitized by Google

"I would rather lose $26,000 however than fail to be cooperative with the Standard of N. J." (exhibit 18).

The sum of $26,000 represented the cost to Cities Service for preliminary participation.

Standard fromed the Hydro Patents Co., called H. P., as the licensing company to administer the United States hydrogenation patents. Standard selected 18 major American oil companies to take shares in H. P. and licenses from it. Standard formulated a series of agreements between S.-I. G., H. P., other corporations created for the purpose, and the prospective stockholders and licensees. These agreements severely limited the rights conferred by the licenses and by the share interests and burdened them with obligations. The amounts of stock to which the oil companies were invited to subscribe were made proportional to the amount of prospective crude oil refining by the respective companies.

The invitations described the offered processes as revolutionary in nature and in capacity and emphasized that they represented the combined technical resources of I. G. Farben and Standard Oil Co. of New Jersey. They presented the alternative that the companies make the large capital contribution required by the plan in order to join or turn down the invitation and be exposed to the much larger royalties that might be charged outsiders (exhibit 19). The minimum payment for this purpose was $238,500; the amount was larger for the larger companies.

With little specific information on the process, its performance, and its patents, most of the companies accepted in the face of this alternative (exhibit 20). Afterwards, after their signature and initial capital contribution had been obtained, the large capital outlay required by the plan for retention of the original investment and the right to stay in, was, on great outcry by the oil companies, written down (exhibit 21).

There are many things to mention about the plan (exhibit 15). To cover the ground, let us take a few in rapid succession:

(a) Though hydrogenation of coal was included, only oil companies were invited to participate;

(b) Though S.-I. G. held also the rights for hydrogenation of gases, that was kept out of this pool and saved for a separate arrangement;

(c) All of the required capital contributions except a nominal amount were payable to S.-I. G.;

(d) The high running royalties also to be paid by stockholders for practice of the process were likewise payable over to S.-I. G.:

(e) The only source of profit to stockholders would be licenses to outsiders, and in such case only out of any excess charges above the large regular rate to be paid by them to H. P. and by it paid over to S.-I. G; and

(f) Standard had the right to buy shares at a nominal rate, and it did so to the extent of 40 per cent of the stock issue of the company. Standard, of course, had, through S.-I. G., roughly 80 percent interest in royalties paid by others or by itself.

Members and licensees were required to enter into a separate agreement with a new company, Hydro Engineering & Chemical Co. [called Engineering], formed by Standard for the purpose and owned by it. By this separate agreement licensees were required to call on Engineering to review all their plans and specifications for construction of their hydrogenation plants. For this service licensees were required to pay Engineering 4 percent of the capital cost of the plants. Furthermore, though required to cross-license their own catalyst patents to Engineering, and furnish it all their information on catalysts, licensees were forbidden use of the hydrogenation patents for manufacture of catalysts until 1938. Thus to operate the licensed process they were in practical result compelled to buy their catalysts from Standard's Engineering.

The licensees objected strenuously to the formation of Engineering and the requirement that all catalysts must be purchased from it.

Mr. Dearborn of the Texas Co. wrote to Frank Howard:

"To require a licensee to contract with H. E. (Engineering) is a drastic requirement of which the government would likely complain. * * * The whole scheme of making it a condition precedent to the grant of a license by Hydro-Patents, that the licensed company shall contract with Hydro-Engineering seems to restrict development rather than encourage and promote it. The greatest possible advance in the development of the process will certainly result in independent action" (exhibit 22).

Digitized by Google

Standard Oil of Indiana also objected vigorously to Engineering. It wrote: " * * * The long term of this contract, the large engineering fee charged, regardless of whether Hydro-Engineering's services are needed or not, and the onerous limitations on the rights of the companies to manufacture even their own catalysts, are certain to be a source of serious irritation and dispute" (exhibit 23).

E. M. Clark of Development replied to this criticism:

"The right to manufacture patented catalysts is not to be given to the licensees of Hydro-Patents. That exclusive right will be granted to Hydro-Engineering. The licensees of Hydro-Patents, however, will be given a right to use such patented catalysts. As to unpatented catalysts, there will be nothing in these agreements which will obligate a licensee to purchase them from Hydro-Engineering" (exhibit 24).

But Indiana was not satisfied with Mr. Clark's explanation regarding the manufacture of catalysts. It answered his letter by pointing out:

"Without reopening the whole matter, I want to call your attention to the fact that your letter does not discuss the inequitable situation mentioned in * * * my letter. If a new catalyst were developed by a licensee he would, under your interpretation of these provisions, have a perfect right to make it himself as long as he did not patent it. But the minute he applied for or obtained a patent he would have to assign the patent to Hydro-Patents and thereby lose the right to make his own catalyst. This would tend to promote the development of secret processes for catalyst manufacture" (exhibit 25).

Indiana again criticized the plan in January 1932. After stating that the monopoly thus set up would extend over many years, it said:

"It is rather apparent that a majority of the refining capacity would be favorably persuaded toward purchasing its catalysts from H. E. Whether this is such a combination of purchasing power as might be attached is not free from doubt" (exhibit 26).

The criticism of Indiana caused Standard considerable worry because a conference was held with its attorneys to consider Indiana's objections. At this conference—

"Mr. Davis and Mr. Neave agreed that since under the terms of the contract the licensees would themselves have the right to manufacture catalysts at the expiration of the reasonably short introductory period there could be no objection to the contracts from the standpoint of the Anti-Trust Law" (exhibit 27).

This "reasonably short introductory period" referred to was 8 years. That period, during all of which Engineering alone would have manufacturing rights under all patents of the group, assured to Engineering a dominant position in catalyst preparation.

The hydrogenation plan established an elaborate network of cross-licensing. Licensees were required to cross-license, royalty free, all their present and future patents falling within the broad definition of hydrogenation. Though they received licenses only under American patents, this requirement compelled them also to cross-license their present and future foreign patents. In the United States, these cross-licenses ran to the licensees of H. P. Thus Standard and I. G. won the power to charge royalties on all discoveries that might be made by others in the field, even though they should become the most important contributions to the process. Standard itself, alone among the members or licensees, won the opportunity to use all such discoveries of other American companies royalty free except for the share of royalty it was required to pay to I. G. In other words, even if American inventions in this field should supplant the German ones, Standard should continue to pay royalties to I. G. but none to the American inventors. It should seem obvious that incentive was frozen.

Outside of the United States, royalty free cross-licenses ran to Standard's foreign licensing company. Of this, none of the American companies were members—except, as to the Shell system, more later. In Germany, the royalty free cross-licenses ran to I. G.

Members and licensees were required to furnish all their present and future information and experience in the field of hydrogenation for disclosure to all those entitled to licenses.

The broad definition of the hydrocarbon field used in the Standard-I. G. four party agreement was carried bodily into the hydrogenation plan—except that the treatment of gases was eliminated. (That subject was saved for a separate

Digitized by Google

agreement.) The hydrocarbon field definition was tied to the definition of hydrogenation. The cross-licensing and exchange of experience provisions were built within the shell of this definition.

Mr. Howard E. Cole, of the Standard Oil Co. of New York wrote to Mr. Howard in May 1930 that he considered the definition of hydrogenation much too broad. To this, Howard replied:

"The definition of the term "hydrogenation process" is not an effort to define the scope of any patents which we own, but rather an effort at defining the field of our present and future inventions within which field all parties must cross-license one another" (exhibit 28).

Mr. Howard thus admits his purpose in defining the hydrogenation process broadly in the agreements was to include any future developments and therefore preclude any possible future competition. The Texas Co. characterized the excessive drag net effect of the definition, in a letter by R. C. Holmes, president, to Mr. Teagle, in June 1930, as follows:

"The definition of the hydrogenation process is broad enough to include not only improvements but also *radically new processes* invented or acquired by the licensee and the license contract is subject to an onerous cross licensing provision" (exhibit 29).

The criticism of Mr. E. W. Isom vice president of Sinclair Refining Co., caused Mr. Howard concern. In a 17-page letter, Mr. Isom discussed the whole scope of the plan from the standpoint of antitrust legislation, to which Mr. Howard replied:

"The field of the plan is criticized as broader than any patent monopoly. By field of the plan, I assume you mean the definition of the hydrogenation process. This is not an effort to define the field of any monopoly—it is merely an effort to say what the process licensed is so that a licensee may know three things: (*a*) Within what range he is free to operate the invention of the various patents, * * * (*b*) to fix the boundary of future inventions of I. G. and Standard to which H. P. becomes entitled to obtain the exclusive licensing rights. * * * (*c*) to define the field of the cross-licenses. The cross-licenses are, of course, for the same field as the direct licenses. The definition of the field of the first is, therefore, automatically a definition of the field of the second" (exhibit 30).

The above explanation, however, did not free Mr. Howard's mind of the criticisms advanced by Mr. Isom because he ended with:

"Frankly, I am very much troubled by your criticism of this point of the breadth of the plan and your statement that it is broader than any patent monopoly. This is exactly the same kind of criticism which was made by the Government in the cracking case of the definitions of the processes there adopted. I was never able to follow their reasoning at that time nor after all the proofs were in was I any better able to follow it. There was no assumption in the cracking case and there is no assurance at the present time that the fields are broadly covered by any patent or patents. I am beginning to think that I must have a blind spot on this question for I utterly fail to follow your reasoning or to find any clue to your statement that because we define the hydrogenation process as the field of the plan we are representing that we own patent rights which cover all things which might come within that definition."

Thus, the definition upon which cross-licenses were required and future inventions tied up was much broader than the actual patents held by S.-I. G. In consequence, no matter what or whose inventions might be made within the broad field defined, Standard would have the right to use them at approximately 20 percent of the royalties paid by others. Indeed, Standard would pay royalties only to I. G. On the other hand, whatever or whosoever the future inventions, others would pay royalties to be divided, 80 percent to Standard and 20 percent to I. G. Standard thus established by contract a fixed economic advantage in synthetic gasoline production, good to last far into the future by force of the agreements.

At the same time that the definition of the broad field covered by the plan specified the kinds of patents that were to be licensed and that must be cross-licensed, it also specified the uses that could be made of the patents so licensed. None of the patents covered were licensed for general use, but only for the operations defined, for manufacture of the products specified, or of products to be used for the purposes specified. In this manner the definition prevented use of any of the pooled processes or experience for purposes of the chemical industry. R. J. Dearborn, of the Texas Co., protested against this limitation.

Digitized by Google

This would be a disadvantage, he thought, to a licensee if coal was being used as a base because he would necessarily make valuable chemical substances.

"It seems economically wrong to restrict a licensee from selling any product which is a direct result of the hydrogenation process under which he is licensed" (exhibit 22).

Thus the pattern of the four-party agreement and the division of fields agreement between Standard and I. G. was placed upon the use and development of hydrogenation in the United States by the American oil industry. In shocking contrast, it appears that the agreement placed no restrictions at all on the use that I. G. might make of the hydrogenation inventions and experience flowing to I. G. from the American oil companies under the cross-licensing and exchange of experience requirements.

We see then that, among the fruits of its joinder with I. G., Standard acquired a practical monopoly of synthetic processes of revolutionary potentialities. It promoted an industry-wide pool in a form which perpetuated Standard's economic advantage and dominance over all present and future developments of processes of that general character. In faithful subservience to its undertaking to I. G. to partition the industry, Standard thus fostered a comprehensive plan which removed the oil industry from general development of the processes for any purpose of manufacture of chemical products.

Manifestly, this instance presents at least four important problems for the committee's consideration:

(1) Whether compulsory licensing of patents and reasonable royalty rates should be generally required. With such a requirement there would be no opportunity to compel acceptance of terms such as we see here; but of course it would be extremely difficult to arrive at the measure of reasonable compensation. Some discoveries cost millions either for the discovery or for development. Discoveries differ in novelty, utility, and the money value of the products to which they apply.

(2) Whether there should be public registration of licensing agreements such as the hydrogenation plan. That agreement was made in 1930. Only now has it been investigated.

(3) Whether use restrictions should not be specifically regulated. Their proper purpose is to save to the patent owner the opportunity to exploit the patent exclusively except for the purposes he is willing to license it, and to enable a licensee to get a cheaper license where he desires to make only a limited use of the patent. But where use restrictions become part of a general plan we see that they serve as a method of partitioning an industry. Where they appear in a patent pool they limit general development by industry.

(4) Whether contracts requiring cross-license of future patents should be regulated or limited. Of course, the basic justification of the cross-license of future patents is to prevent the licensee from impairing the value of the licensor's patents by acquiring improvement patents and withholding them from the licensor. We see that the device has now grown into blanket cross-licensing requirements, making the licensor's patent position self-perpetuating.

Although these practices may have their justification in particular cases, it now seems clear that the point has been reached where the hardship that a change in the law might work in individual instances is offset by the general purpose to be served. Of course, the problem presented is not at all that of the individual inventor, though the effect that any legislation may have upon him must be considered. The problem is that of the manner in which aggregated corporate wealth is used in exploitation of scientific development under its control.

Hydrogenation abroad.—Now we turn to the rest of the world. The system that Standard elaborated for management of foreign hydrogenation patents is of interest for two reasons, (1) because it is a striking instance of frank and direct use of patents in protection of market position, and (2) because it shows that the patent structure abroad and at home were knit together and governed interdependently as a world-wide system. All of the parts served the system, and the system served to consolidate industrial and commercial position. (I introduce exhibit 31, embodying the international hydrogenation plan of February 16, 1931, and separate agreements with Imperial Chemical Industries, Ltd., dated April 10, 1931.)

By this international hydrogenation plan no pool of general membership was formed, though the possibility of later taking in members in particular countries was provided for. In the beginning Standard took in one partner, its peer as an

Digitized by Google

international oil company, the Royal Dutch-Shell system. Shell was sold a half interest. Special position was given in the British Empire to I. C. I. Both of these companies held important interests in International Bergin Co., holder of the foreign Bergius patents. By the deal made, these interests were consolidated with those of Standard and I. G., and the foreign Bergius patents were thus brought under control (exhibit 32).

Before scanning the structure of the international hydrogenation plan itself let us look to the reasons leading to the Standard-Shell partnership under which the plan was operated. Manifestly, interest in the Bergius patents was not alone enough to win full partnership, as witness the failure to give I. C. I. other than a limited position, and the failure in this country to give the Chemical Foundation any position at all. The reasons were two: Shell's own relations with I. G., under which I. G. had insisted that Standard must bring in Shell (exhibit 33); second, Shell's commercial position in world markets, in respect of which the hydrogenation plan represented an incident of cartelized commercial truce.

In the 1920's Shell too had been dickering with I. G. for hydrogenation, and had been exploring a general alliance. Shell and Standard were both large oil operators in Germany and I. G. was interested in peace—on terms. Shell was not a suitable partner for a complete marriage, for Shell already had certain chemical interests directly related to hydrogenation in Shell's manufacture of nitrogen and fertilizer. This is well brought out in a memorandum prepared by Frank A. Howard in April 1933:

"Chemical field: This relates to the so-called 'Division of Fields' agreement between us and I. G. The matter divides itself geographically into Germany and the world outside of Germany, and again divides functionally under chemical developments based on oil and natural gas as raw materials, and chemical developments not based on these raw materials.

"The theory of the agreement was that the two parties, I. G. and Standard Oil, were engaged in industries which fundamentally were noncompetitive, and that they could, therefore, keep peace with one another by each surrendering to the other control of any of their excursions into the territory of the other and arranging for joint exploitation of developments which lay on the border line. A part of this border-line field has been covered by Jasco includes such developments as the fatty acids and rubber. If these things ever get out of the experimental stage and on their feet as paying propositions it would be feasible to admit Shell into participation in them. It would be very difficult indeed, however, for Shell to swallow the broad principle of keeping out of the chemical business. They are already in fertilizer manufacturing in Holland and in the United States, and they have been quite active in other lines of chemical development, mainly but not entirely based on oil and natural gas. There is no doubt that it would be a constructive thing to do for them to come into this deal with us and I. G., but I have never had any indication that they would swallow the broad principle, and in addition I have never seen a clear road which would prevent us from getting ensnarled in misunderstandings with them unless we adopted the broadest possible line of merging our research and development work with theirs in effect" (exhibit 34).

However, as stated above, I. G. did not wish to make a deal with Standard that would exclude Shell. Standard at length won acceptance for a formula upon which Standard should make the deal with I. G.—I quote from a letter written by Mr. von Riedemann, Standard's foreign representative, to Mr. Farish:

"As you are not familiar with the early history of this whole situation, I might explain that when we got interested in the I. G.'s hydrogenation process, the Shell sat up and took notice, with the result that Kessler had several discussions with the I. G. In order to prevent the I. G. trading one against the other, we suggested to the Shell as a solution that we trade for the process, with the understanding that we should offer them a participation if it came to a contract" (exhibit 35).

Standard was to deal with I. G. on a basis covering the whole of the oil and chemical industries, making Standard and I. G. partners with their special interests allocated between them, and thereafter Standard would take in Shell on an equal basis as to hydrogenation. Upon this formula Standard and I. G. executed their basic agreements. Afterward there was some confusion as to the extent of Shell's equal interest. According to Shell it was supposed to be an equal partnership world-wide (exhibit 36). According to Standard it was supposed to be world-wide outside of the United States, but in the United States

Digitized by Google

Shell should come in as any other member of H. P.—which of course was no equal position at all. Standard held to its point, and Shell came into I. H. P. and agreed that Shell Union Oil Co. of California should come into H. P. as an ordinary member. Of course the settlement was not free. Shell agreed to the price $10,500,000—$7,500,000 of this in cash and $3,000,000 payable from royalties (exhibit 37).

The settlement with Shell was not, however, wholly satisfactory (exhibit 38). In the first place, Shell took no place at all in the general oil patent pool between Standard and I. G., but only in hydrogenation. In the second place, Shell was not fully tied in as to hydrogenation in the United States. The membership of Shell Union in H. P. was not a basis for full technical cooperation, since the parties were not equal all over the world. The failure to effect complete reconciliation for a long time remained a stumbling block to cooperation as to new developments.

The significance of the international hydrogenation plan as either a cause or a symptom of commercial truce between Standard and Shell in the world oil markets outside of the United States appears in the terms of the plan. The full details of the commercial relationship between Standard and Shell could not be ascertained from our investigation, but the correspondence repeatedly refers in terms to an over-all written understanding governing the world marketing relations of the companies (exhibit 39). Their cooperation is emphatically illustrated in their unanimity of policy in the face of political demands of such foreign governments as France, Germany, Italy, Spain, Hungary, and Japan (exhibit 40).

The foreign hydrogenation licensing system established by the series of agreements contained counterparts of all the features we have observed in the American system. A Liechtenstein corporation was formed under the name International Hydro Patents Co. (called I. H. P.), to receive, hold, and license foreign hydrogenation patent rights, that is, to perform the function abroad of H. P. here. There was this exception—that whereas Standard was the principal beneficiary of H. P., Standard and Shell were coowners of I. H. P. both by stock interest and by the terms of the agreement. There was an International Hydro Engineering Co., the counterpart abroad of Engineering at home, in like manner serving as a complete intelligence service over hydrogenation plant construction and operation, as a device for a capital levy of 4 percent upon all construction, and as a center of control over catalyst manufacture and development. Under I. H. P. and International Engineering the like cross-licensing network bringing into the system all present and future inventions of licensees was set up. There were the same provisions for cooperation by all in maintaining and acquiring patents for the system. There were the identical limitations against uses of hydrogenation for chemical purposes, thus extending abroad the scheme within which the use and development of the world-wide pool of patents and technique relating to hydrogenation were restricted to the oil industry, leaving its enjoyment for chemical purposes to I. G. alone.

The whole network was tied together with the American system by a series of agreements between the various corporate entities employed in the two systems, including Bataafsche, International Co. of Vaduz, I. H. P., S.-I. G., H. P., International Engineering, and American Engineering. Cross-licenses, agreements to exchange information within the system but not to develop it outside, assumption of obligations as to the terms upon which licenses could be granted in America or abroad—all assured that hydrogenation rights and technical information would flow within the system and not go out of it. In Germany, of course, I. G. was the exclusive recipient of rights and experience from the system.

These were the likenesses of the I. H. P. plan to the H. P. plan. There were also differences. The foreign licensing plan related the patents directly and specifically to protection of markets.

The foreign licensing plan falls into two divisions, that for hydrogenation of oil, and that for hydrogenation of coal. For hydrogenation of oil, Standard and Shell were given unrestricted right to licenses. Licenses were not, however, to be offered to the remainder of the industry if the effect would disturb marketing position, or, as it was termed in the agreement, the "'As is' position." This expression, used to adapt patents to markets, was defined in detail. In brief it meant the marketing position of respective companies in respective countries as enjoyed in the year 1928.

Custody of the marketing positions of the oil companies of the world as they might be affected by hydrogenation was allocated between Standard and Shell.

Digitized by Google

The world was divided into 2 halves—American companies, over whose "'As is' position" Standard was given custody, and non-American companies, handed to Shell. By definition, Russia was neither American nor non-American. Anglo-Iranian Oil Co., Ltd., was provided a special position. The agreement provided that either Standard or Shell could request licenses for other companies, but Shell could not require licenses that would impair the "As is position" of any American company, and Standard could not require licenses that would impair the "'As is' position" of any non-American company. The definition as to Russia had the effect that the marketing position of any Russian company was not an object of protection and its disturbance was no impediment to grant of a license.

For coal hydrogenation, licenses could not be granted either to Standard, Shell, or any other company to a capacity in any country in excess of such company's "'As is' position." Standard was given the privilege to write the terms of coal hydrogenation licenses to American companies, Shell was given the privilege as to non-American companies. Without the consent of both, coal hydrogenation licenses could not issue to Russia unless it agreed to deliver its entire production under the licenses to nominees of Standard and Shell to be marketed by them and the profits shared between the marketers in proportion to "'As is' position" where marketed. Anglo-Iranian was similarly restricted except in countries where it should come in as a partner.

The special agreement by which I. C. I. was brought in presents both one of the cornerstones of I. H. P.'s foundation and an instance of I. H. P. in operation. I. C. I. was granted a license within the British Empire. The license was for hydrogenation of coal only, except for fractional amounts of oil. The license was limited to the production in each country of the Empire of not more than 25 percent of the current consumption of each product in that country. The agreement blandly recited that this restriction should not be "understood as an expression of intention on the part of I. H. P. to limit in any way the total production of oil from coal by the hydrogenation process in the Empire." If no others beside I. C. I. should build plants, the limitation on I. C. I. obviously would stand as a restriction of total production, and this is true in spite of certain further concessions made to I. C. I. in this event.

On its part, I. H. P. warranted that no other licenses for hydrogenation of coal had been granted in the British Empire, and that no other licenses would be granted in excess of 75 percent of the current consumption of oil products in each country. Thus for the largest British chemical industry its reserved space in the synthetic oil production industry was both fixed and guaranteed. The usual ties into the system by cross-licensing requirements were included in the license. On the subject of catalysts the language is as follows:

"All licensees of I. H. P. (including I. C. I.) shall be required to purchase their catalysts from I. H. P. or its nominee" (exhibit 31).

Many other undertakings were included in the deal with I. C. I. Originally they were all drafted as provisions of the license itself. As executed, however, the other commercial aspects of the agreement were made the subject of a separate instrument entitled "Commercial agreement," bearing the same date as the license, April 10, 1931. By a third agreement of the same date the two were made interdependent. I. C. I. was required by the commercial agreement to deliver all the hydrogenation production to nominees of Standard and Shell to be marketed by them in proportions specified by them. We have seen by the I. H. P. agreement that these proportions were governed by "'As Is' Position." The companies agreed to pay I. C. I. its average price, and I. C. I. agreed to pay the companies the comfortable figure of 15 percent per annum on their marketing investment employed in this business. The exception was made that I. C. I. might take the orders of any British Empire government directly, but it agreed to fill them through the companies and agreed not to go into the business of distributing. Freight savings on Government orders effected through exchanges were to be credited between I. C. I. and the companies by formula. I. C. I. agreed to buy all its crude oil requirements from the companies.

The commercial agreement also included further provisions defining the effect of I. C. I.'s license. Although the license was in form royalty free, the equivalent of royalties in the form of payments for the right to technical information and experience to be supplied through the I. H. P. system was required by the commercial agreement. It is interesting to observe that these royalities were only slightly in excess of the amounts that ultimately had to be paid by the system to I. G. out of the I. C. I. license with the particular exception that the

Digitized by Google

lubricating oil fees were far higher. It was in the commercial agreement, also, that I. C. I. agreed to withhold its hydrogenation information and experience from anyone not within the I. H. P. system. An engagement special to the I. C. I. contract, apparently arising from I. C. I.'s experience in hydrogenation and from its position with reference to the Bergius patents (exhibit 32), was included in the commercial agreement, whereby I. H. P. on its part, agreed to pay to I. C. I., within limits, 10 percent of all hydrogenation royalties collected from others by I. H. P.

In this complete admixture of commercial treaty and patent licensing, serving inextricably the purposes of both, and freezing the future of the technique, the function of the patent as promotion of invention is certainly far lost. Yet it is upon such material as this that the world-wide hydrogenation system is built, into which the mould for American hydrogenation fits as a perfectly adjusted part.

Here, then, is a running picture of the comprehensive, world-wide system created for hydrogenation. It brought together all then feasible methods of synthetic production of oil products. It saved the world-wide development of the technique in the chemical industry for I. G. Farben. It brought the American oil industry into the common fold. It gave to Standard and I. G. the permanent royalty advantage in American developments in the field. It gave to Standard and Shell the world's developments for their use and control outside of the United States and Germany, subject to world-wide royalty interest of I. G. It gave the world's developments to I. G. for its exclusive enjoyment in Germany. It laid down the lines of adjustment of potential synthetic production and existing industrial and commercial position in the oil business outside the United States and Germany. Finally, it created a structure of contractual interrelationships by force of which Standard obtained a commanding position over subsequent developments in the vastly important use of hydrogen and catalysts in modern methods of manufacture of the products of petroleum.

The recent consent decree adjudged the American hydrogenation plan unlawful, and enjoined its further execution. Licensees were given the right to obtain the benefit of all provisions of the decree. Together with all other patents in S.-I. G., specifically all hydrogenation patent rights thrown by both Standard and I. G. into S.-I. G., were made subject to compulsory licensing to the public. They are royalty free for the war and subject to reasonable royalty rates thereafter. Complete know-how—that is, technical information for use of the patents—is also made available. The contracts with Hydro Engineering & Chemical Co., which were forced upon licensees, were dissolved. Use of the hydrogenation patents and processes for all purposes whatsoever, oil and chemical, was made available.

The decree had no application to I. H. P. and the international hydrogenation system. For one thing, under the exigencies of war the international agreements are far too complex in their ramifications to withhold the solution of American hydrogenation until solution of such aspects of the foreign agreements as may be judiciable in the United States. There are, of course, questions as to adequate jurisdiction here for the purpose. But principally the reason for taking no action on this subject is, aside from the existence of outside interests, that in the present change and stress and military direction of international business a court decree could not well be asked. Likewise no effort was made to deal specifically with the question of the relationship between Standard and Shell in the world oil markets.

For several years after the hydrogenation system was established, no competitive process for synthetic production appeared (exhibit 41). There was little activity on the subject in America. The Chemical Foundation's suit against Standard on the Bergius patents began in 1935 (exhibit 42) and was settled in November 1937 (exhibit 43). The American Bergius patents were then taken into the system. Only Standard and Shell built hydrogenation plants in this country. They were used for production of high quality lubricating oil and high-octane gasoline.

Standard's obligations to I. G. were pointedly characterized during this period on the occasion of the development of 100-octane aviation gasoline. In 1935 technique had not advanced to the point of making fuel of this quality available in quantity. It was not yet used commercially, and military use of it had been only experimental. Base stock of high enough octane for blending 100 was available only in fractional amounts from the hydrogenation plants of Standard and Shell. In 1935 the United States Army sought to obtain 100-octane gasoline in quantity. Standard came to the conclusion that new processes were necessary to make the program possible. It happened that at that time Standard had obtained experi-

Digitized by Google

mental results from which it saw the possibility of quantity production of 100-octane gasoline by a new adaptation of hydrogenation. A memorandum prepared by Mr. Howard, dated March 29, 1935, examined the right of Standard under its agreement to complete this technical development and hold it exclusively for the United States Army (exhibit 44). The memorandum pointed out that should this be done, thereafter, until others caught up with the development and for at least several years, the United States would have the lead over the military aviation of the rest of the world. The memorandum then pointed out that Standard had no right under its contracts with I. G. Farben to bring about this result, since under contracts it was required to disclose to I. G. all its hydrogenation developments. To comply with the wishes of the United States Army and to so serve the country's defense Standard would have to violate its contracts with I. G. In fairness to Standard, it should be said that it appears the Army was informed of the situation. The case is here stated for illustration of the restrictions of the I. G. agreements upon Standard's freedom of action in matters vitally affecting national safety.

Abroad the story of hydrogenation in this period was largely that of growing pressure by those foreign governments which were actively promoting national self-sufficiency. While I. G. in its domain was building large hydrogenation plants, chiefly at its Leuna works, in the rest of the world Standard and Shell sought to discourage governmental promotion of synthetic production. Where their hand was forced, they used their control of the process to secure the right to distribute and market the products of such enterprises. Italy brought about hydrogenation construction, and Japan was active on the subject. It is of interest that although I. G. had surrendered hydrogenation for the rest of the world, it continued to stir active interest in the subject in Japan. I. G. had retained the proprietorship of hydrogenation outside the oil industry and by that channel the Japanese received education in the process. The shadowy figures of Abe, Matsuoko, and Kurusu flit through these years. The German Economic Commission sat in Japan. It is impossible to ascertain all that transpired (exhibit 45). The Japanese armed forces were able to proceed with their own hydrogenation construction without regard for licenses. By the time of the war several Japanese firms, championed by I. G., were seeking licenses from I. H. P. In the rest of the world there were negotiations of greatest complexity and diplomacy. At first the policy of Standard's and Shell's I. H. P. was that of suppression. By 1935 the pressure of developments forced a change in policy. Let us sum up the foreign hydrogenation story with the following statement by Standard of the I. H. P. policy, dated August 20, 1935:

"I. H. P. should keep in close touch with developments in all countries where it has patents, and should be fully informed with regard to the interest being shown in hydrogrenation and the prospect of its introduction by Governments, coal, tar, lignite, shale producers, and others. It should not, however, attempt to stir up interest in countries where none exists. If the Management decides that in any country the interest in hydrogenation is serious, or that developments in such country are likely to affect I. H. P.'s position adversely, then I. H. P. should proceed to take steps necessary to protect its position, should discuss the matter actively with the interested parties, and attempt to persuade them that its process should be used. In these countries where negotiations are already pending, I. H. P. should pursue those negotiations in a way and upon conditions which are likely to secure the introduction of I. H. P.'s process if any process hydrogenation is to be used.

"Subject to the above qualifications, viz., that I. H. P. should not attempt to foment interest where none exists, I. H. P. should be put in the position of an independent patent holding and licensing company, and allowed to attempt to sell its process wherever there is serious interest in hydrogenation.

"We feel that this is the sound and far-sighted policy to be followed. We cannot, by restricting the activities of I. H. P., other than as above stated, expect to do more than retard slightly the development of coal, tar, etc., hydrogenation, and a policy of repression will in all likelihood lose to us the advantage which is inherent in our present position. On the other hand, the policy outlined above will not tend to stir up interest in hydrogenation if it does not already exist. If coal, tar, etc., hydrogenation be feasible from an economic standpoint, or if it is to be promoted for nationalistic reasons or because of some peculiar local conditions, it is better for us as oil companies to have an interest in the development, obtain therefrom such benefits as we can, and assure the distribution of the products in question through our existing marketing facilities" (exhibit 46).

Digitized by Google

SUBSEQUENT OIL PATENT POOLS

1. HYDROCARBON SYNTHESIS (OR FISCHER) PROCESS

By 1936 a competitive synthetic process had been developed (exhibit 1). Standard began to negotiate, as also did the M. W. Kellogg Co., which had worked along similar lines in this country. Standard's negotiation necessarily brought in Shell, Standard's partner in I. H. P. The proprietor of the new development, called the Fischer process, was Ruhrchemie A. G. (exhibit 2), owned by the German steel interests (exhibit 3).

Essentially, the new process consisted of a means of joining gases, namely, free hydrogen and free carbon monoxide or dioxide, to form heavier hydrocarbon of useful nature, such as lubricating oil, gasoline, other products of the oil industry or products of the chemical industry, such as synthetic fats. In Germany the gases treated had for the most part to be first obtained from coal. The value of the process was to offer another means of synthesizing oil from coal and to broaden the type and quality of products obtainable. In this country the prospects for use of the process on a commercial basis were far brighter because of the availability on a large scale of refinery gases otherwise wasted and because of supplies of coal and natural gases (exhibits 4 and 5).

Here again the basic principle was not new. It had been known long before, but its practice had not been developed. Ruhrchemie's developments owed much to Hitler's 4-year plan, in the course of which large sums of money had been thrown into work on the Fischer process because of its strategic value in Germany.

Hyrocarbon synthesis process is brought within the network.—The potentialities of this competitor of hydrogenation and the possibilities of arranging for it a similar or an affiliated licensing system were explored. In a memorandum from Paris dated February 11, 1936, Mr. Howard expressed the problem facing Standard as a result of the advent of the new process as follows (I quote from exhibit 1, which has already been introduced):

"Summarizing the present situation, therefore, we must face the fact that the I. H. P. has definitely lost its complete control over the production of synthetic oils. While it remains the most important factor in that it controls the only commercially demonstrated processes, and the only one producing a full line of liquid fuels, the combination of the Fischer process as a means of producing gasoline, and of the Pott and Uhde processes as a means of producing heavy oils, makes a very serious breach in the hitherto satisfactory control of the situation. We are, therefore, faced with the problem of what program we should adopt in the light of these changes in the situation.

"The question before us is twofold:

"(1) Are we willing to make any substantial additional investments in the acquisition of control of synthetic processes, in the hope of continuing to dominate this field, and thus guide or limit commercial developments under such processes?

"(2) Should we utilize whatever measure of control which we have over these synthetic processes at the present time to produce revenue for the I. H. P. by licensing our patents for use in connection with these synthetic processes, or should we adopt the policy of withholding licenses from the competitive processes in an effort to hamper their successful development, without regard to the direct financial loss to I. H. P. which will result from such a policy?

"The developments, both commercial and by contracts, in connection with the Fischer process, are proceeding so rapidly that every month's delay will present us with more problems of the fait accompli order which will be difficult or impossible of solution if we eventually do acquire control of this process. If we are to do anything in the way of trying to guide or restrict the development of the Fischer process outside of Germany, the time to do so is now. An appropriate opening for any discussions which we care to undertake with the Fischer people will come through the immediate necessity of deciding whether we are agreeable to licensing, for use in the Fischer process outside of Germany, certain I. G. improvements in production and purification of coal gas. Fischer has approached the I. G. for a license to use these I. G. processes in Fischer plants inside of Germany.

* * * * * * *

"One question which immediately presents itself is whether, if we buy the Fischer, Pott, and Uhde processes, we shall not find that in another year or two we have up the same question with respect to other newly developed competitive processes. The probability is that this will be true to some extent and

Digitized by Google

that any restriction or repression which we exercise over the normal growth of these synthetic processes will result in encouraging the development of competitive processes. All that can be reasonably expected is that the importance of future competitive processes will be on a descending scale, as is usually the way in the development of any new art.

"Another question is whether we can exercise any effective control over commercial developments even if we do acquire the patent rights for these competitive processes. The answer to this is very unsatisfactory. In the first place, the Fischer process is not very fully covered by patents outside of Germany, and we are bound to find an incomplete and partially ineffective patent situation in many important countries. In the second place, we already know that governmental policy will not permit us to stand in the road of national developments of this character in countries in which the probability of such developments is greatest. Lastly, our monopoly of technical information in this field is fast being lost, and this technical information as much as the patents is the basis of control of the processes. Altogether, the answer must be that our control over these competitive developments could not be effective enough to do anything more than to give us a strong preferential position for the use of the processes ourselves (which we do not especially desire as a general rule), or to use some pressure to insure cooperation between the licensee and our operation subsidiaries in the country in question.

"The last question is whether there is any expectation of our being able to acquire those competitive processes at a price consistent with the rather limited value which we must assign to our control over them in line with the above. The I. G. appear to believe that we can. It seems that without attaching any undue weight to this opinion, we are certainly not justified in assuming that nothing can be done. Therefore, we cannot by this means relieve ourselves of the necessity of discussing and weighing this situation, and endeavoring to determine, in the light of our experience in the handling of the synthetic situation to date, what policy we should now adopt in relation to these developments. It seems rather clear that we must either decide to do something towards acquiring control of the competitive developments, or put into effect a further important liberalization of our policy in the handling of the I. G. process."

At first, in early 1936, Standard's executives expressed discouragement about the prospects of controlling synthetic production of gasoline, because of the costs of maintaining control, the difficulties in the exercise of control under the pressure of nationalistic governments, and the invidiousness of monopoly (exhibit 6). Standard was hesitant to spend any substantial amount in acquisition of the process (exhibits 7 and 8). The executive committee did not, however, despair of making a deal with the Fischer interests (exhibit 9).

On December 11, 1936, Howard wrote to Teagle (I quote from exhibit 8):

"I am told in strict confidence that an understanding exists between the Anglo-Iranian Company and the British Government to the effect that Anglo-Iranian will undertake a commercial development of the Fischer process in England about the Summer of next year, making an announcement of the plan earlier if the pressure on the Government from the coal interests becomes too hard, and delaying it if they can do so. I feel that when this announcement is made in England the pressure on governments throughout the world to undertake measures for the production of synthetic gasoline from coal will be increased tremendously

"The above of course means that we must try to move our Fischer negotiations as fast as we can if we expect to have a part in this picture. In my opinion we ought to have a part in it. If we let the foreign governments proceed on a synthetic coal hydrogenation program without any cooperation on our part the outcome will be that we shall wind up in a very large proportion of our markets with the governments actively interested in the oil business in competition with us rather than in cooperation with us. I only see one answer to this problem and that is to try to cooperate with the governments from the beginning and in this way to guide their policies and investments rather than to permit them to go along unadvised in a way which will ultimately lead them to discriminate against us in one way or another as a means of working out their own national oil policies."

Howard was correct. Pressure from other governments seeking national self-sufficiency by synthetic production made it apparent that control of the Fischer process must be acquired if Standard and Shell were to be secure in continued domination of the international oil business. The policy of I. H. P.

Digitized by Google

had been to discourage synthetic production. by use of its hydrogenation process. If nevertheless, a government was determined to embark upon synthetic production, the Fischer process might now be used instead of the hydrogenation process. A typical situation was that in China (exhibits 10 and 10–A). I quote from a letter dated March 18, 1937, by W. R. Carlisle, a Standard official, to P. W. Parker of Standard-Vacuum Oil Co., a company owned 50–50 by Standard and Socony-Vacuum (exhibit 10):

"Further to my letter of March 11th, in connection with the filenote attached thereto relative to IG's proposal that their representative, Mr. von Schubert, should take the lead in all negotiations regarding hydrogenation in China, and the view expressed by the I. H. P. representatives that the "committee" in Shanghai should decide who should take the lead in each particular case, the Shell here for your information have written to their Shanghai office advising that they are definitely of the opinion that a representative of the oil companies should always be present at any of these negotiations The reason for this is that their view is that IG's interests and ours, at least for the moment, are not exactly identical, based on information they have received from their Shanghai office to the effect that their local people believe IG are to some extent trying to create the demand for a hydrogenation plant in China

"Further to the above, the Shell here have also forwarded to their people in Shanghai some additional remarks to the memorandum regarding the policy of I. H. P. and I. H. E. C., copy of which memorandum I also forwarded to you, and the gist of these are as follows:

"That in general the production of oil from coal (or tar) is uneconomic and can only be carried out with substantial duty protection. That it is clear that such antieconomic production is against the interests of the Oil Companies; that in general therefore, it is in order that the Oil Companies should try to prevent countries getting interested in uneconomic production of motor fuel. That if such action is feasible and desirable care should be taken, however, that it be made quite clear by the Oil Companies that, if nevertheless the Government should be interested in going ahead with synthetic production then the best solution is to apply the I. H. P. process rather than any other solution. That as a matter of fact, since the I. H. P. is the only company which can offer a process which has been proven on a large scale and technically fully developed, it offers the only sensible solution for a Government, once that Government have made up their minds that synthetic oil production is worth the sacrifice. That, in other words, if the Oil Companies think it feasible and desirable to start any action to prevent China from going in for synthetic motor-fuel production, they should be very careful not to get from the smoke into the fire, namely if—failing success of the Oil Companies' action—synthetic production should be carried out by competitors, e. g., Fischer, instead of under license from I. H. P."

Negotiations were difficult and prolonged (exhibits 11 and 12). This was to be expected in view of the obstacles in the way, including the frequent clash of interests among the relatively large number of parties involved, the tense international situation, the necessity for Government approval of agreements made by the German parties, and prior commitments, to say nothing of the biggest problem of all, viz, that of fitting the new process into the already terrifically complicated arrangements made for hydrogenation and other processes.

In the month after Munich, as of October 7, 1938, agreements were signed tying up the Fischer process, called by the agreements "hydro-carbon synthesis." Standard desired no publicity as to these agreements as is shown by the following quotation from a letter by Howard dated December 21, 1938 (exhibit 12–A):

"We have refrained from making any public announcements in connection with this matter, because it did not seem that there was anything to be gained by such an announcement at this time.

"You will recognize that the matter has two aspects, first, the strictly political aspect of the Fischer Process in its existing state of development. It is not at any place an economic method of producing oil, but is an active political issue in various foreign countries. There would seem to be nothing to be gained by publicizing the recent arrangements in connection with this side of the matter.

"The other aspect of the arrangement is the provision for cooperation in research to develop along the direction of utilization of unmarketable natural gas supplies. Here, also, publicity would seem undesirable, since it would stimulate competitive effort."

Digitized by Google

Hydrocarbon synthesis agreements.—The principal parties were Standard, Shell, Ruhrchemie, I. G., Farben, and Kellogg. Eleven agreements were executed (exhibits 13 through 16). They established for hydrocarbon synthesis a worldwide system similar to that which had been set up for hydrogenation (exhibit 17 and 18).

Our review of the hydrogenation system makes it unnecessary to look at the particulars of the hydrocarbon synthesis system. The latter follows a like pattern, except that control was tighter. It should be sufficient to look at certain of the differences in the new system, to observe the special protection given I. G. against the use of this new process for chemical purposes, and to see the interconnection established between it and hydrogenation.

Let us look first at the proprietorship of the new process as allocated by the agreements. In America there was one principal difference between the previous hydrogenation arrangement and that made for hydrocarbon synthesis. For the latter, no pool of general membership was formed. The partners retained entire proprietorship. The patent and technical rights for both the United States and Canada were placed in a new American corporation, the Hydrocarbon Synthesis Corporation, familiarly called U. S. A. C. signifying those countries. Its stock was issued 25 percent to Kellogg, 25 percent to Shell, and 50 percent to S. I. G. Ruhrchemie's interest was confined to royalties.

In Germany no new corporation was formed. I. G. was made the beneciary of Ruhrchemie's rights and of cross-licensed rights arising from the system.

Outside of the United States, Canada, and Germany, the patent and technical rights were placed in a new Dutch corporation, International Hydrocarbon Synthesis Corporation, called I. H. S. Its stock was issued 50 percent to Ruhrchemie, and 50 percent to I. H. P., owned by Standard and Shell. I. G. was given the right to overriding royalties.

There were numerous and extremely complicated agreements to govern the use and licensing of the patent rights and information, to create a complete cross-licensing circuit as in the case of hydrogenation, and to parcel out royalties. There were equally complicated contractual arrangements between I. H. S. and I. H. P., providing for affiliated management of the congeries of patent rights held by each and setting up a pool of royalties between them with elaborate schedules for distribution. Such adjustments were necessary because Ruhrchemie was interested in I. H. S. but not in I. H. P. Combined management of I. H. S. and I. H. P. served to centralize all processes for synthetic production of petroleum products. One provision in the I. H. S.-I. H. P. contracts stipulated that in all construction work under licenses for the practice of hydrocarbon synthesis, German construction firms would be favored and especially recommended to licensees.

Next let us see what kinds of licenses were made available by the arrangement. To carry out in this new synthetic field the old division made by Standard and I. G. in 1929, it was necesary to make new agreements directed toward that purpose since new parties were involved, not merely in the capacity of licensees but also in the capacity of proprietors.

Accordingly, the new division of uses of the hydrocarbon synthesis process followed the old lines drawn by the 1929 agreements between Standard and I. G. In Germany, all of Ruhrchemie's rights were handed over to I. G. and I. G. was permitted to practice the process thus covered for all purposes without restriction. I. G. also received in Germany rights to be cross-licensed under this system. Outside of Germany, I. G. was denied the right to any use of the process for purposes of the oil industry but was given the right to use the process for chemical purposes.

In the world outside of Germany, Standard and Shell were given unrestricted right to licenses but the character of licenses issuable to them was limited to prevent use for chemical purposes. The substance of the old 1929 definition of "the hydrocarbon field" was taken into the new agreements. Certain relaxations on the restrictions against chemical uses were made, of a nature so technical that I do not attempt to explain them, but I. G. was given the power to forestall even these relaxations.

Kellogg's position under the agreements was chiefly that of construction engineer and licensing agent interested in the business of future licensees. Kellogg was cut out of any extensive use of the process for any purpose. Outside of the United States, it was denied the right to any licenses; within the United States, it was given the right to receive licenses for use of the process only within seven

Digitized by Google

named counties in Texas, and only for the production of a maximum of 25,000 barrels per day.

Although outside the United States the licensing activities of I. H. S. and I. H. P. were coordinated by agreement, within the United States the licensing activities of H. P. and U. S. A. C. were kept wholly distinct, since, under the process definitions, the members of H. P. held no interest in dydrocarbon synthesis.

Reaffirmation of basic 1929 agreements with I. G. by Standard.—Formation of the hydrocarbon synthesis trust was the occasion of a reaffirmation by Standard of its basic agreements with I. G. It has been seen that S.-I. G. received 50 percent of the stock of U. S. A. C. However, I. G.'s interest in S.-I. G. was only 20 percent, and was therefore not an assurance to I. G. that the new pool would be so controlled as to protect I. G. in the chemical industry. Hence one of the 11 hydrocarbon synthesis contracts (exhibit 15) was in effect an amendment and reexecution by Standard and I. G. of the four-party agreement of November 9, 1929. The coordination agreement of November 9, 1929, was also specifically made applicable. Standard by this new compact conferred upon I. G. the right to nominate half of those directors of U. S. A. C. who were to be elected by vote of the stock of S.-I. G. Standard retained the right to nominate the other half of these directors.

This new agreement expressly provided that the vote of all the directors to be elected by S.-I. G. should be dominated by I. G. for purposes of the chemical industry and by Standard for purposes of the oil industry. It was thus placed in the power of I. G. to block all use of hydrocarbon synthesis in this country for the manufacture of any chemical products. Even this was apparently not enough for I. G.'s assurance. In January 1939 I. G. got from Standard a reaffirmance of the basic division of fields agreement of November 9, 1929, and also of the Jasco agreement (exhibit 19). As late as September 1940, upon a further amendment on an apparently technical matter, Standard again restated its generic relations with I. G. in further reaffirmance of these agreements (exhibits 20 and 21).

Importance of hydrocarbon synthesis.—The possibilities considered when this process was acquired are indicated in a Standard report of November 3, 1938, as follows:

"In the course of the various discussions, Keith gave some outline of the way Kellogg has been thinking about future developments. Kellogg has prepared a report on their own work and an estimate for a 4,000 B/D plant working on natural gas using assumed process data which Kellogg think would apply if certain special conditions they had in mind were fulfilled.

"This report has been written purely as a basis for criticism and has not been officially given out although Scharmann has unofficially received a copy. I have only been able to glance at it, but speaking from memory the 4,000 B/D plant is estimated to cost around $8,000,000 as compared with Development's estimate in D–202 of $6,000,000 for a 2,000 B/D plant. Gasoline cost, including fixed charges, is estimated at 3–4 cents per gallon of gasoline. Kellogg do not expect anyone to believe this but apparently they have some confidence in their own figures and the enthusiasm in the whole Kellogg group was terrific" (exhibit 24).

Mr. Howard at this time stated (I quote from exhibit 22):

"The costs of the process as so far developed are high—approximately the same as the cost of hydrogenation of coal. By using cheap natural gas as a raw material to produce the carbon monoxide and hydrogen, however, the cost according to present methods may be very greatly reduced. There is good reason to believe that still further large reductions in manufacturing costs (especially as applied to natural gas) can be effected within the next few years by further technical work along very promising lines which have already been partly proven."

The capital cost of a hydrocarbon synthesis plant appears, however, to be high, and the product must compete in this country with cheap natural products. The importance of the process thus appears to be, as in the case of hydrogenation, chiefly its potentiality in case of a crude shortage, or other change of conditions, or for supply in countries possessing no petroleum. The process is technically practicable, as witness the large plants operating it in Germany (exhibits 25 and 26). In the hands of Standard and Shell the importance of the process was that of complementing their control of hydrogenation to assure control of methods of synthetic production.

Digitized by Google

Acquisition of hydrocarbon synthesis process completes world-wide domination of synthetic production.—We have thus reviewed in outline the network of agreements under which Standard and Shell obtained complete control outside of Germany of processes for synthetic production of petroleum products. It is in itself a commentary on these uses of the patent system that one of Standard's own executives should describe the agreements covering the last acquisition, the hydrocarbon synthesis process, as follows (I quote from exhibit 11):

"The attempts which we have conscientiously made to take care of the conflicting interests of the various partners and to provide for various contingencies which may arise, gives me the feeling that if this deal is ever completed it will be so frightfully complicated that only those who have worked intimately and constantly in connection with the preparation of the documents and who have participated in the discussions will ever be able to understand it."

Mr. Howard, however, in speaking of the foreign arrangement for hydrocarbon synthesis, in his report to Standard's executive committee on October 28, 1938, expressed the result quite simply as follows (I quote from exhibit 22):

"The high points of the matter are that Jersey and Shell acquire sufficient effective control of the hydrocarbon synthesis process in the world outside of the United States so that their position as leaders in the entire field of synthetic petroleum production is assured."

It is also a general commentary on the relation between international compacts of this character and the national interest of this country that only currently has the United States Department of Justice had the opportunity to explore the hydrocarbon synthesis agreement. Only now is this committee considering it. The record shows, in striking contrast, that these agreements were never permitted by the German Government to go into effect until reviewed and specifically approved and released by that Government (exhibits 32 through 42). Indeed, the German Government went even further, as is shown by the following quotation from a letter dated June 18, 1937, by M. W. Kellogg (exhibit 43):

"I further wish to draw your attention to the fact that the Government has taken material control over all patents in Germany, to be used for the best interests of all concerned, including the Government."

It should also be added that officials of the I. G. were at this time also officials of the German Government (exhibits 44 and 45).

So far we have followed through the guardianship of synthetic production of petroleum products. Meanwhile there were agreements in the general field of oil refining. The industry operates under a mantle of patent agreements of many varying combinations of partners, subjects, and relationships, of far greater number than I can treat here. Certain of them should, however, be referred to for their further illustration of the I. G. Farben-Standard-Shell relationships.

2. GAS POLYMERIZATION PROCESSES

A new patent pool formed in 1939 by American promoters of a new process, was so utilized by Standard as to manifest in an unusual manner its service to its German patent partner. The new process provided a method of combining light hydrocarbons in gaseous form to produce heavier hydrocarbons such as gasoline. These gases are not free hydrogen and free carbon monoxide or dioxide. They are gases comprising molecules of hydrogen and carbon atoms already combined. Their combination is not exactly a synthesis of petroleum products, since the usual source of such gases is petroleum itself. Methods for polymerization, that is, this combination of the light molecules into a heavier molecule, increase refinery output by recapturing hydrocarbons that would otherwise pass off as gases and by converting them into liquid product.

Before 1935 Kellogg, Standard, the Texas Co., and Standard Oil Co. of Indiana had made progress in this new development. On September 1, 1935, these partners, together with the Phillips Petroleum Co. formed a patent pool and licensing agreement covering the process. Patent rights were placed in a new corporation named Polymerization Processes Corporation, called Polyco. At the time of the execution of the above agreement, Standard did not reveal to the other members of the pool the details of its agreement with I. G. of November 9, 1929, under which Standard received the right, through S.-I. G., to all of I. G.'s oil-refining processes, and hence to all of I. G.'s present and future patents and technique in the field subject to this agreement. This is

Digitized by Google

brought out in a memorandum prepared by W. E. Curry, Standard's patent attorney:

"If the polymerization agreement is signed with definitions which include the patent rights of Standard-I. G. Company, we must arrange to keep the patent rights of I. G. on polymerization and catalytic cracking out of the polymerization agreement. Mr. Howard suggests that this be done by a quit claim by Standard-I. G. to I. G. with respect to those inventions, then taking them up in Jasco. There would be a general understanding that the parties will agree to some equitable arrangement for securing the same effect as would have been secured under the original agreements" (exhibit 46).

Therefore, on August 12, 1935, less than a month before the agreement was executed, S.-I. G. quit-claimed back to I. G. all rights in the gas polymerization field (exhibit 47). This was done in order to prevent I. G.'s rights from passing under the agreement to the other patent-pool members.

In 1937 the shoe was on the other foot. The German Government wished to obtain Polyco processes for Germany, especially for the manufacture of aviation gasoline. I. G. called upon Standard. Standard and I. G. thereupon restored these rights to S.-I. G. By extending licenses of them to Polyco, Standard obtained for I. G. royalty-free licenses under all of Polyco's rights in Germany (exhibit 48). The result is that, although at the time of the Polyco agreement Standard had control of the American patent rights held in S.-I. G., Standard successfully prevented their flowing to the American partners in Polyco until the partners licensed I. G. royalty-free in Germany.

3. JUIK

The force of the partnership between Standard and I. G., as affecting disposition of patent rights developed by American oil companies, is illustrated by a series of developments in the field of refining of lubricating oil. These relate to a process using propane for the dewaxing, deasphalting, and solvent extraction of petroleum oil (exhibit 49).

A patent pool and licensing agreement covering the process was formed on October 2, 1933. The parties were Standard, Union Oil Co. of California, Standard Oil Co. of Indiana, and Kellogg. The agreement is called "Juik," signifying Jersey, Union, Indiana, and Kellogg (exhibit 50). At the time of the formation of this pool Standard itself had few patents in the field. It obtained its participation by force of I. G. patents that it had received through S.-I. G. (exhibit 51).

The partners exchanged licenses to their processes and agreed to divide royalties received from licenses to others. The original pool was added to from time to time by agreements including further technique and processes (exhibit 52). These additions did not relate to any necessity to bring in further patent rights in order to solve conflicts in patent processes. They were brought in merely to give the pool a more comprehensive position. As stated by Mr. Curry in a letter:

"There are at present no set patent controversies between the parties to Juik with respect to phenol as a single solvent. We cannot tell, of course, what developments might take place within the term of this agreement since all the parties are active, in solvent extraction work, *patent conflict might be expected*" (exhibit 53).

During 1935 the German Government placed pressure on German industrialists to increase lubricating-oil production (exhibit 54). Again in this case I. G. called upon Standard and expressed its desire to obtain the Juik processes.

In this case I. G. did not appear to be interested in manufacturing lubricating oils in Germany, but was greatly interested in obtaining the benefit of all Juik information and experience and in being able to grant licenses (exhibit 55). I. G. emphasized Standard's obligation under the four-party agreement to obtain licenses and exchange of experience for I. G. in Germany as result of all licenses by Standard of I. G.'s American patents. It also insisted that in the circumstances it should not be required to make any expenditure to acquire in Germany the benefit of Juik.

Standard's patent attorney, Mr. W. E. Currie, admitted that the provisions of the four-party agreement in this respect had been overlooked at the time of the Juik agreement (exhibit 56). Thereupon, Standard sought to comply with I. G.'s wishes (exhibit 57). Standard was not able at this date, however, to obtain the consent of the Union Oil Company to a free disclosure of information to I. G. (exhibit 58). As a result, Standard purchased from Juik for the sum of

Digitized by Google

$15,000 the exclusive right for Germany to the processes in question as described in the Juik agreements (exhibit 59). Thereupon, on December 15, 1938, Standard fulfilled its obligations to I. G. by transferring to it the irrevocable and exclusive right for Germany to all the Juik rights and information thus acquired (exhibit 60).

After the transaction was completed there was considerable dispute whether I. G. should remunerate Standard for the purchase. I. G. emphasized that Standard had merely fulfilled an existing obligation to I. G., but eventually, by June 1938, refunded Standard's disbursement (exhibit 61).

Standard continued to serve I. G.'s interests. In March 1940 it agreed to extend the definition of Germany to include Austria and the former territory of Czechoslovakia. It was agreed that the consideration for the further sale brought about by this extended definition should be established by the parties at a later date (exhibit 62).

4. SULFURIC-ACID ALKYLATION

One of the principal present-day methods of producing aviation gasoline became the subject of active negotiation during the year 1938. A pool formed to cover the process is of special interest for the questions it poses as to the relation between patents and patent pools. The parties attached such value to the process as to fix a high royalty rate for licensees. However, Standard had such a weak patent position that its own executives concluded Standard had no reasonable possibility of prevailing in an interference proceeding. Nevertheless, Standard obtained a position in the pool entitling it to licenses under all the pool patents royalty free and to participation in royalties from licenses to others.

The proceedings in question came to be called sulfuric-acid alkylation. Like polymerization, it is the joining together of light hydrocarbons to make heavier hydrocarbons. In this case the starting material and the products are of different type. In polymerization each of the 2 joining molecules lack the maximum number of hydrogen atoms they are capable of containing; the product of the combination must be hydrogenated to produce an aviation gasoline material. In alkylation 1 of the 2 four-carbon-atom molecules has its maximum of 10 hydrogen atoms and accordingly the resulting eight-carbon-atom molecule has its maximum of 18 hydrogen atoms and no further hydrogenation is necessary.

Formerly it had been thought that the molecules lacking maximum hydrogen, called olefins, were the only ones that could be joined. The new process rested upon ascertainment that the molecules containing their full measure of hydrogen, called paraffins, could be made to combine with olefins if the atoms in the paraffin molecule were arranged in a branched or crossed formation. This formation, giving the material the name "iso" paraffin, would also carry over into the product and give it an "iso" formation, which, for the purposes of aviation gasoline, is the type of product desired. This product it "iso" octane—8 carbon atoms and 18 hydrogen atoms, arranged in a branched or crossed formation.

The part played by sulfuric asid in this reaction is that of a catalyst. The acid does not itself enter into the reaction, but its presence facilitates the reaction whereby these materials are combined to result in this product. "Iso" octane in its perfect state is itself the level of 100 octane from which the octane rating is measured. As produced from refineries by sulfuric-acid alkylation the material rates from 90 to 96 octane and is a high-quality blending agent for raising the octane number of base stock gasoline. The blend, with other additives to improve the quality in other respects, is leaded to 100 octane.

Sulfuric-acid alkylation more than doubles the output of aviation gasoline from a given run of crude oil and has proved to be one of the most valuable and economical means of production of aviation gasoline at the present time.

In July 1938 Standard discovered a sulfuric-acid alkylation process from a British patent obtained that summer by Anglo-Iranian Oil Co., Ltd. Its value for production of aviation gasoline was perceived almost immediately. Standard also readily found that it had no patents at all on the subject, but that Shell had obtained a British patent bearing an international convention date in Holland of several days prior to the Anglo-Iranian patent. Both patents were filed in July 1936. Shell's patent was more specific than Anglo-Iranian's, but on the other hand the claims of Anglo-Iranian's patent were broader. A license under both was obviously more desirable than one under either taken alone.

It was found that Universal Oil Products Co. also had an old patent of 1935 which had some bearing on the process, but did not touch it with any precision.

Digitized by Google

Standard reviewed its files and ascertained that in 1935 its chemist, Mr. Stahly, had actually brought about the patented reaction in experiments at Baton Rouge. The experiments had not been followed up because no satisfactory analysis had been made of the product of the reaction. It was also found that as early as 1931 Dr. Schneider, working for Standard Alcohol Co., had conducted experiments which could be shown to have involved the same reaction. These experiments apparently had not been followed up. These facts have been taken from a letter of September 13, 1938, by Mr. W. E. Currie, patent attorney for Standard, to Frank A. Howard at London, reviewing the patent question in this field. Mr. Currie came to the conclusion that on the basis of Standard's previous experiments it must decide the issue whether to file application for a patent or to contest the existing patents on the ground of prior discovery and public use. I quote Mr. Currie's observations as decidedly of interest in connection with the arrangements eventually worked out. Mr. Currie stated:

"No doubt we did exactly what the patents called for, but no one realized just what was obtained. The advantage of the method was not appreciated until the disclosure of the patents came to our attention. * * * We are seeking an interference after being spurred into activity by our competitors' disclosure. * * * Conditions being as they are, however, the best course, as we see it here, is to file the application" (exhibit 63).

Of the Stahly experiment, in particular, Mr. Currie continued as follows:

"The Stahly experiment is not satisfactory for use as a basis for filing a patent application. At most it shows the conditions of operation described in the Anglo-Iranian and Shell patents. By a great deal of explanation and "hindsight" it might be possible to show that Stahly must have obtained alkylation. Situations such as this are on the ethical margin. With some liberalness of view, I suppose we can justify the filing of a patent application on this work, although it must be admitted that the chance of ultimate success if we get into interference with Shell and Anglo-Iranian, is almost nil."

Mr. Currie's general conclusion was that Standard should apply for a patent and file interference, in the hope of obtaining a patent agreement, regardless that Standard's chances of winning in interference were "very small." His conclusion was expresed as follows:

"If we do file the application and lose in interference with Shell and Anglo-Iranian, we would then, of course, be in a very poor position to set up the alleged public use as a defense. We would have taken the position that it is not a public use by asking our inventor to swear that, to the best of his knowledge and belief, the invention has not been in public use more than two years before he filed his application. While an inconsistency of this sort is probably not fatal, nevertheless it would be very prejudicial to our case.

"This situation involves a question of policy. To be perfectly frank about it, we have very small chance of winning in interference. What we are really doing is provoking one for the purpose of introducing prior art to show that the claims are not patentable, unless our opponents have been willing to make some sort of agreement with us which will result in a satisfactory settlement of the issues. You will recall that the same thing, or a closely analogous situation, occurred in the Ester Salt agreement, in which the Shell Company filed a United States application and went into interference with our case, although we firmly believe that Shell never had any expectation whatever of being able to establish priority. This action by Shell probably was largely instrumental in getting the United States patent situation in the Ester Salt agreement. We believe that where there is any reasonable doubt, it is fair to go in interference on early work which may not fully satisfy the requirements of proof which would enable us ultimately to win the interference."

By October 1938, Standard had discovered that Texas also had a patent position, and furthermore, that an old polymerization patent belonging to Standard Alcohol Co. broadly covered the operation—although in terms of polymerization. The latter patent, however, was due to expire in 1940.

It happened that just at this time, as will be shown more particularly later, Standard's representatives were in conference in London in a series of negotiations of formation of a broad patent and technical pool covering catalytic processes. The general scope of the negotiations included the sulfuric-acid alkylation field by definition. The parties with whom Standard was then negotiating on this subject were I. G., Indiana, and Anglo-Iranian. In these circumstances Standard sought a special agreement with Anglo-Iranian to cover the

Digitized by Google

particular discoveries made by it as to sulfuric-acid alkylation. Mr. Howard, on October 10, 1938, cabled Mr. Russell Anglo-Iranian's reaction as follows:

"Anglo Persian Oil Company, Ltd., considers they are pioneers in alkylation field but absolutely not interested (in) royalties and agreeable in principle exchange alkylation with us on the assumption we have technique or experience of some value to offer" (exhibit 64).

During the course of the negotiations Standard decided that the best policy for gaining a position under the agreement would be to press aggressively its own use and development of the discoveries patented by the other parties. This policy was expressed in Mr. Howard's cable as follows:

"My impression is this whole development will be so involved that we can safely count upon working out satisfactory arrangements if we aggressively push practical developments, thus certainly acquiring valuable technical experience and probably improvement patents (Stop). I therefore favor proceeding at once with Baton Rouge conversion and acquiring all technical data necessary (for) Aruba and Palembang jobs (Stop). It is evident 'none of the companies' active in this field feel they have any effective monopoly in the situation because all seemed to have been endeavoring to trade (Stop). Therefore urge straightforward aggressive policy on technical developments, use in patents with assurances future patent problem can be taken care of reasonably satisfactorily" (exhibit 64).

Standard obtained an agreement from Anglo-Iranian that it would act together with Standard in negotiations and give Standard the benefit of its patent position. For the purposes of this understanding, Mr. Howard cabled from New York to Anglo-Iranian on January 16, 1939, that:

"Up to this time we have no commitments to exchange information or licenses in this field with any other parties but there have been preliminary discussions with Shell and Texas and it seems probable that it will eventually be desirable to make some arrangement at least with Shell" (exhibit 65).

In this connection, there does not appear to be any way of reconciling this representation with Standard's long-standing obligation to I. G. under the four-party agreement of November 9, 1929, Article X providing as follows:

"The parties agreed to work together on the technical development of the hydrocarbon field, to communicate to each other during the life and within the scope of this agreement all technical knowledge and experience, past, present, and future, patented and unpatented, of which the parties are now possessed or shall hereafter be possessed in the sense of having the power to dispose of them, and also to help each other in their efforts to obtain adequate patent protection."

It was finally arranged not only that Anglo-Iranian would permit Standard to come in on an equal basis with it, but that also Anglo-Iranian would entrust to Standard the negotiations with the other parties. This is interesting in view of the fact that in the very beginning Standard sought—as it was characterized in a letter of September 14, 1938, by Mr. Russell to Mr. Howard—"a free ride under Anglo-Iranian alkylation patents world-wide, or even a participation with them in an attempt to exploit the field jointly" (exhibit 66).

Standard finally concluded a contract providing a participation of 30 percent in favor of Shell, 30 percent in favor of Texas, and 40 percent to be divided between Standard and Anglo-Iranian. Standard thereupon, in view of the weaker patent position originally held by it, offered to waive the 50–50 agreement with Anglo-Iranian and to split the 40 percent so that Anglo-Iranian would receive 24 percent of the total and Standard 16 percent. Anglo-Iranian, however, declined the offer. It insisted on bestowing upon Standard the full half of the 40 percent to be divided between Standard and Anglo-Iranian (exhibits 67 and 68).

The agreement executed as of April 12, 1939, conferred upon each member royalty-free licenses for the world under the present and future patents of each of the parties. It provided for exchange among them of their present and future information within the defined field. Each party retained the right to grant licenses under its own patents, but was required to turn into the pool 50 percent of receipts under United States patents, and 100 percent of receipts from foreign patents. The agreement also permitted any party to grant licenses under any and all of the patents of all parties, but upon a form of license prescribed by the agreement incorporating cross-licensing and other terms, and fixing the royalties to be charged.

Digitized by Google

These royalties, fixed at 42 cents per barrel (equivalent to 1 cent per gallon), are high as admitted by Mr. W. E. Currie in a letter of December 7, 1939, to Mr. Merrell E. Clark.

It was pointed out by a letter from the Standard Oil Co. of Ohio to Mr. Russell dated September 8, 1939 (exhibit 69) written in negotiation for a license, that the high royalties fixed for sulfuric acid alkylation were based on the fact that the product was to be used in an expensive fuel. Ohio sought a license to use the process, but to use it only for the purpose of making motor fuel of good quality. Therefore, it asked for a license at a royalty amounting to one-fourth of the royalty fixed by the agreement. Ohio pointed out that there was precedent for such a request "established in the catalytic polymerization field." It appears that Ohio's complaint that the royalty was excessive solely because the process was used in connection with an expensive product was justified. From a letter written by Mr. D. Pyzel of Shell to Mr. E. W. Isom of Sinclair Refining Co., on March 21, 1940, it was stated as follows:

"I am sending you our present standard license form from which you will see that we have decided to charge a rate of 1¢ per gallon for alkylate produced without regard to whether the product will be used for aviation fuel or for other purposes. However, we have already made you an offer for a license on the basis of ½¢ per gallon for alkylate product and an additional ½¢ per gallon if such alkylate is used for aviation fuel" (exhibit 70).

In result, with practically no patent position, but by deliberately forging into the field and acquiring experience after discovery of other patents and by making use of its affiliations, Standard acquired not only free operating rights under but also a participation in the revenues from one of the most valuable modern processes, commanding a high royalty return.

It is interesting in this connection to turn to the list of Standard's applications and patents attached to the sulfuric acid-alkylation agreement. No United States patents belonging to Standard are mentioned, but only applications. The only one filed earlier than November 1938, at which date the negotiations were in full swing, is one that is not referred to in Mr. Currie's memorandum. We notice it only in a letter from Shell to Mr. Currie dated November 14, 1939, in which Shell objects to the inclusion of this patent on the ground that it did not properly come under the alkylation agreement. Standard apparently insisted on mentioning this application in the list attached to the agreement, presumabily in order to make some show of an earlier date. In the same letter Shell also objected to Standard's inclusion of the only issued patent that Standard had claimed in the field and this patent was not listed under the agreement.

On May 5, 1939, Mr. Currie wrote to Mr. P. J. Whelan, of Humble Oil & Refining Co., who had drafted the application which Standard had insisted on listing under the agreement. Mr. Currie informed Mr. Whelan of the successful outcome of the alkylation negotiations and of the help given Standard in these negotiations by the terms of the application as drafted by Mr. Whelan in 1935. I quote Mr. Currie's expressions for their value in characterization of the patent pool represented by the sulfuric acid agreement as follows:

"We regard this as a favorable outcome to the negotiations. As you, of course, know, we made a great deal of capital of the disclosure in our United States patent application Serial No. 56,914 of the conditions which are necessary to effect alkylation. I do not know how much weight this carried with the other parties, but I am sure that it had considerable beneficial effect.

"We do not quite give you credit for foreseeing all the effects of this statement. However, whether it was included with conscious effort to provide for possible developments, or whether it was included merely because of the intuition of the skilled patent solicitor, we congratulate you on putting it in" (exhibit 71).

One other party was taken into the alkylation agreement. It developed that Universal had a patent claim. In fact, a patent taken out by Universal in 1935 was sustained by the Patent Office as covering the field. Mr. Currie in reporting to Anglo-Iranian in a letter of October 21, 1940, the necessity of bringing in Universal, stated the point as follows:

"It would have been possible for Universal to defer final decision by making the various appeals allowed by law for three years or more. In the absence of any agreement, this situation would have disastrously affected the licensing position of the group. It was for this reason that Universal was desired as a party to the agreement along with the oil company parties" (exhibit 72).

It was not necessary, it may be observed, at least as to Standard, Shell, and Texas, to take in Universal for their own operations. By an earlier 1931 Uni-

Digitized by Google

versal settlement, those companies obtained immunities under all of Universal's present and future patent rights, which were also to be available to such wholly owned subsidiaries of those companies as should grant back cross-licenses to Universal on their pyrolytic cracking rights. However, inclusion of Universal enabled the pool to grant licenses to outsiders on Universal's patents (exhibit 73).

As noted in the above-mentioned letter to Anglo-Iranian of October 21, 1940, Universal was awarded an 18-percent participation in licensing receipts. An exception was made, however, as to joinder of Universal as regards Germany and Japan. Universal had granted exclusive licenses under all its alkylation patents for Japan.

In a letter of December 18, 1940, Mr. Howard reported to the Standard executive committee that Standard had arranged to discharge all its obligations assumed in the original C. R. A. interchanges of experiences begun in 1938 with Indiana, Kellogg, Anglo-Iranian, and I. G. To this purpose, he presented for approval an agreement with Indiana whereby Standard would waive all of its share of royalties under the sulfuric acid alkylation pool as against Indiana and whereby Standard would receive a free license under all of Indiana's patents in the field. As to Anglo-Iranian, that company was a partner in the agreement. Kellogg, it was stated, "had been taken care of by granting them a licensing agency." As to I. G. it was said:

"The position of the I. G. was to have been taken care of by special arrangements for Germany which are necessarily in abeyance because of the war" (exhibit 74).

As to exchange of information with I. G., we may note that this was discontinued by action taken by a meeting of the representatives of Shell, Texas, Anglo-Iranian, and Standard held on November 1, 1939, as recorded in a memorandum of that meeting reciting as follows:

"It was unanimously agreed that under present circumstances no further technical information or experience concerning alkylation would be passed on to I. G." (exhibit 75).

All of these agreements—Polyco, dealing with polymerization of gases to produce gasoline; Julk, dealing with dewaxing and solvent removing treatment of lubricating oil; and the sulfuric acid alkylation agreement, dealing with the production of aviation gasoline blending agent—were affected by duties enjoined upon Standard by the recent consent decree. Since the decree dissolved the ties between Standard and I. G., these can no longer be used to create through Standard a relationship between I. G. and the patent pools. Standard will no longer consolidate the combined patent and technical assets and resources of itself and I. G. Nor will Standard be able to use an I. G. partnership to acquire special privileges from the pools or to exercise undue power therein. I. G. will not have the right in the future to call upon Standard to obtain for I. G. patent or technical benefits.

As to aspects of these pools not tied in with the Standard-I. G. partnership, the decree contains certain further requirements imposed upon Standard. As to these requirements, however, it is provided in the decree that Standard shall not be deemed in contempt for failure to fulfill them to the extent it is prevented from doing so by refusal of the other parties to the contracts in question to agree to amendments. Of course, the Department is not precluded by the decree from taking any action that should be found necessary and appropriate as against the pooling agreements themselves on their own merits and wholly apart from the restraints created by the Standard-I. G. tie. Doubtless any question as to any further action in regard to patent pools of this character will derive guidance from the results of this committee hearing.

The decree requires Standard, however, to undertake and carry on diligently negotiations with the various pool members to bring about amendments to accomplish the following results specified in the decree. These are: First, to assure that licenses under all of the pool patents as well as the "know how" will be available for the period of the war to all persons. Second, to make licenses and "know how" available after the war to any person without any restrictions whatsoever on the use of the patent or as to products to be produced, and without any other limitations whatsoever, but with the right to charge reasonable royalties. Third, to refrain after the war from bringing any further patents into the pools without the assent of the Attorney General.

C. R. A.

Among the oil patent pools promoted by Standard in exploitation of its management of the combined patent assets of itself and I. G. Farben Industrie, the pool covering far the broadest field of operations was that promoted under the term

Digitized by Google

"C. R. A." The initials presumably signify Catalytic Refining Association. The proposed pool covered the broad field of catalytic refining, including catalytic cracking, catalytic vis-breaking, and catalytic reforming.

The original cracking processes carried out by application of heat, called thermal or pyrolytic cracking, had been found to break down the heavier hydrocarbons into lighter hydrocarbons such as gasoline. The discovery had practically doubled the output of gasoline from crude oil. During the latter 1930's a technique began to evolve for the use of various catalysts in this cracking operation, with resulting increase in yield and in quality of product or improvement in conditions of treatment. There began to evolve, also, the technique of reforming with the use of catalysts. By reforming, a given distillate of crude oil could be improved in its characteristics by rearranging the formation of the molecules comprising the distillate.

The use of hydrogen in these operations under certain circumstances was also found to be valuable. In that connection Standard from the beginning insisted that the hydrogenation agreements had a possible claim upon the use of hydrogen, even though addition of hydrogen into the final product was not involved, and though hydrogen was used only to facilitate the reaction without being itself consumed as it is in hydrogenation. The process ultimately developed involving the use of hydrogen, which was given the name "hydroforming," is capable of producing high-octane gasoline, toluol for explosives, and other valuable products.

Several forms of catalytic cracking have been developed. Catalytic cracking is also capable of producing high-octane gasoline as well as the C–4 raw material for butadiene, and other valuable products.

Early in the C. R. A. negotiations the importance of this field of operations was described by Mr. Howard in a letter of October 19, 1938, to the Shell Co. as follows:

"The developments here in question appear to be the most important technical developments which th oil industry will have to face for the next few years, and it seems reasonable to assume that catalytic cracking, catalytic viscosity breaking, and catalytic refining, all conducted sometimes without the use of dydrogen and sometimes with the use of hydrogen, will be primary processes of the oil industry and in universal use.

"These processes appear to give exactly what the oil industry needs for the next decade to preserve its balance, that is, higher octane gasolines and larger yields of distillate fuels with lower yields of residual fuels. These results can be obtained through the use of the catalytic technique with investment and operating costs almost identical with those of the corresponding thermal operations" (exhibit 119).

A final C. R. A. pooling agreement was never reached. Negotiations began during the year 1937. By 1938 formal drafts of agreement had been evolved. Negotiations continued indefinitely thereafter. Memoranda of agreement upon C. R. A. were drafted as of October 12, 1938 (exhibit 120), October 13, 1938 (exhibit 121), August 15, 1939 (exhibit 122), February 3, 1940 (exhibit 123), April 17, 1940 (exhibit 124), May 11, 1940 (exhibit 125), July 19, 1940 (exhibit 126). The draft of July 9, 1940, is the latest to which I have had access. Though a final agreement was never formally adopted and executed, there were numerous negotiations with potential licensees. One license was actually granted to Pan American, a subsidiary of Indiana, by instruments executed by the separate parties conformably with the then existing C. R. A. memorandum. Other licenses were similarly granted. I file in one batch as exhibit 127 documents showing many of the acts done and commitments assumed pursuant to C. R. A.

From the beginning the C. R. A. memoranda have by definition covered operations far beyond the scope of any existing patents, or, indeed, of any existing process. The memoranda have been formulated as licensing agreements which would cover not only technique already evolved and falling within the definitions, but also processes that might be evolved in the future. The negotiations did not arise out of patent conflicts. They began before the processes had been discovered. It is true, however, that the desire to fix by contract the rights in future patents and technique was not indulged all by itself and without any occasion for it. An independent process outstripping existing methods and producing a superior quality high-octane gasoline had been volved. The Houdry process, developed by a Frenchman of that same, had been acquired by Sun and Socony. Sun, with the courage of its convictions, had forthwith invested over $10,000,000 in a plant, and it was successful.

Digitized by Google

A principal purpose of C. R. A. cooperation was to develop, by joint research, a process to meet the Houdry challenge. The C. R. A. negotiations sought to settle in advance the rights of the parties in patents and technique that might evolve from the common research effort, and to provide for licensing to others. The field of research cooperation spread to many operations. Voluminous reports of technical data and laboratory information were exchanged. The progress thus made was undoubtedly of great practical importance. But regardless of whether the C. R. A. memoranda were intended merely to serve the purposes of the joint research and to provide a means of licensing such discoveries as should be made, or whether they were intended to assure control of operations in the field, the terms of the memoranda as formulated were of a character to freeze for a long time to come and to fix by contract the benefits and burdens attaching to patent rights and technical information falling within the broad process definitions. The memoranda as formulated gave Standard, and through it I. G., a fixed royalty advantage, a right to royalties by definition from all other members of the group, and the right to utilize developments by all parties without payment of royalties. The members were the leaders in the industry, and the memoranda in terms were drawn so as to crystalize their position.

Furthermore, the record shows that Standard promoted C. R. A. with the purpose of thus controlling future patents by force of contract. It also shows that Standard utilized, to the utmost, advantages accruing to it from existing contractual relations and affiliations in order to bring about a C. R. A. agreement having this effect. Standard used to the utmost its advantageous position under the hydrogenation agreements to bring about acceptance by the members of Hydro Patents Co. of a general agreement upon catalytic refining, with and without the use of hydrogen. Standard sought to utilize the C. R. A. negotiations as a means for a general settlement with Shell which would restrain competitive licensing by Standard and Shell. Standard exercised to the utmost the power of its basic partnership with I. G., while consistently keeping concealed from the C. R. A. partners the extent to which Standard already controlled all of I. G.'s patents in the field, and for this purpose trading to its own advantage upon the impression that the terms must be made satisfactory to I. G. in order to obtain its consent. On the other hand, after the outbreak of war, Standard gave the industry the impression that Standard had taken over all interests of I. G. in the C. R. A. patents, whereas I. G.'s interest remained substantially unchanged.

The effect of the C. R. A. memoranda as drafted.—The first C. R. A. partners pursuant to the draft of October 12, 1938 (exhibit 120, supra), were Standard, I. G., Indiana, and Kellogg. Anglo-Iranian was to join in the exchange of information and patent rights and to have favored royalty rates without participation in royalties. Because of a patent reciprocity agreement, Indiana was to be permitted to bring in Texas on an equal footing with it. Standard was to be permitted to bring in Shell on an equal footing with it.

The basis of distribution of royalties was placed in terms upon the size of the respective companies in relation to the world's oil industry, and not upon their patent assets or patent contributions. I. G.'s size was arbitrarily presumed to be the same as Standard's. The general nature of the royalty divisions remained the same in the later memoranda. By the time of the draft of August 15, 1939 (exhibit 122, supra), Shell, Texas, and Universal had come in.

The C. R. A. memoranda embodied the restrictions preventing the manufacture of chemical products which were embodied in the four-party agreement between Standard and I. G. They contained also additional restrictions narrowing the use of many of the refining processes to the production of naphthas and specified fuels. The use of the pooled patents for the manufacture of chemical products was to be permitted under licenses from the pool only to the extent that such products constituted byproducts normal in the operations of the oil industry. Thus toluol and butadiene could be produced only as byproducts.

Under the terms of the memorandum of July 9, 1940 (exhibit 126, supra), each of the oil company members licenses each other under its present and future processes as defined and divulges to each other all technical information in the field. The parties grant licensing rights to Universal and to Kellogg, and under certain conditions to S. I. G. Members' rights may not be licensed without a cross-license by the licensee under all its present and future processes within the field.

Digitized by Google

The draft of July 9, 1940, in terms permits each member to issue separate licenses under its own patents and retain the royalties, but he is prohibited from transmitting to his licensee not only the technical information acquired from other members of the group but even his own information, except in cases where it is necessary to protect such member's operating interests. The latter contingency is doubtless concerned with possible patent conflicts. Members are required to use special efforts to prevent technical information acquired from the group from being used in the chemical field, or even in the oil field for specified processes, either in their own operations or the operations of others. They are required to prevent any disclosures to outsiders.

Members are required to pay specified royalties to S. I. G. by definition, regardless whether their operations do or do not need a license under any patent of the pool.

As in the case of the hydrogenation system, members and licensees are required to grant licensing rights under their foreign patents to a special company to be owned jointly by Standard and Shell. Universal was required, in return for a specified participation in royalties, to surrender to this special company all of its foreign patents in all fields, within and without the C. R. A. field.

The July 9, 1940, C. R. A. memorandum was thus in terms a general patent settlement, covering the complete and world-wide plan, tying its members and licensees tightly into the system and banding them together in defense of the system.

From the beginning Standard sought to promote an agreement which would control the catalytic refining field.—Standard's purposes and the complications involved appear at an early stage in the following cable of January 27, 1937, from Howard & Pyzel (of Standard and Shell, respectively) to Brandon Hague:

"We propose to endeavor to work out the following program: *Firstly*, all Universal security holders to grant to Universal nonexclusive right to grant licenses under their patent rights for catalytic cracking and to share expense of enlarged research program on this subject by Universal; *secondly*, I. H. P. and Hydro Patents grant Universal nonexclusive right to license in U. S. and exclusive right outside U. S. their patents on catalytic cracking and agree to provide catalysts on suitable basis; *thirdly*, Universal grants Hydro Patents nonexclusive and I. H. P. exclusive right to license all Universal patents on hydrogenation; *fourthly*, I. H. P. and Hydro Patents grant Universal right to license hydrogenation of polymer at 15¢ per barrel either inside or outside U. S. Stop Purpose is to build up strong patent position on catalytic cracking, including catalytic dehydrogenation in Universal and at same time make permanent clear division of field between cracking and hydrogenation Stop Please discuss also with Interhydro and cable your opinion" (exhibit 128).

The reply cabled on January 22, 1937, stated:

"Yours 19th AD firstly AD secondly since existing hydrogenation contracts of I. H. P. and Hydropatents don't extend to catalytic cracking and at least I. H. P. have so far not otherwise acquired rights this field. Please inform what you have in mind. Stop" (exhibit 129).

On January 27, 1937, Messrs. Howard and Pyzel replied to this cable as follows:

"We realize existing I. H. P. and H. P. contracts do not extend to catalytic cracking, but as some catalysts and general technique very similar to hydrogenation consider it desirable to extend agreements where necessary" (exhibit 130).

Standard endeavored to clear the way toward a general agreement by disposing of the field of polymerization, covering processes already developed, which were pooled under the agreements that we have mentioned. The situation was stated by letter of June 21, 1937, from Mr. Pyzel to Mr. Jacobson, both of Shell, as follows:

"As said before, once we have an agreement for cooperation in these special fields of catalytic polymerization and hydrogenation of polymers, similar agreements in a wider field will be easier to make. I am, however, of the opinion that further extension of proposals for cooperation should not be made before this comparatively simple agreement is made and has proven to be successful" exhibit 131).

On January 7, 1938, Mr. Howard wrote to Messrs. Farish and Teagle a characterization of the plans in refeernce to the new developments as follows:

"Mr. Russell and I have a plan under which we believe we can institute full cooperation between the larger companies interested in Universal in the field of catalytic cracking—and still leave the door open for us to go along with Houdry if they make us an acceptable proposition" (exhibit 132).

Digitized by Google

We may observe that at this time Standard appraised I. G. and Kellogg as counting for little in the oil industry without the alliance with the Standard. In making this appraisal for the purpose of viewing the future bargaining course Standard should take, Standard envisioned the possibility of competition resulting but resulting in such a manner that Standard would derive advantages from both competing sides. We see this position asserted in a letter by Mr. Howard to W. R. Carlisle of Standard's London office dated May 17, 1938, in the following:

"This naturally raises the question of whether we are making a mistake in going along with the plans for an I. G./Kellogg/Jersey combination. I do not think so. I believe that we should attempt to create and maintain always real and sound competition in all basic developments in the industry. The Universal/Houdry combinations would be strong enough to get along without our direct help. The I. G./Kellogg combination cannot become a real factor in the industry, I believe, unless we go along with it. The outcome of this situation may be in either of two directions: If there is no serious patent conflict between the two groups, they may go along indefinitely in direct competition with one another; if there is a serious patent conflict, they will have to find some 'live and let live' basis of settlement similar to the settlement worked out between Universal and Gasoline Products."

That Standard would not be confined to one competing group was stated as follows in the next paragraph:

"As regards Jersey's own position, we automatically have a license under all of Universal's developments; and through our I. G./Kellogg deal we will hope to emerge with a free license under all of these developments; and in addition, a participation (either directly or through I. G., or both) in the licensing revenue. I would hope that the possible deal between Houdry and Universal would take such form that through it we might also secure a complete license under the Houdry patents.

In spite of the possibilities of ultimate understanding with Houdry this letter pointed out, however, that:

"We have definitely abandoned our negotiations with the Houdry group and are therefore in a position to close a deal with Kellogg at once if we desire to do so" (exhibit 133).

The office of the C. R. A. agreements under negotiation, as that of agreements to control the patents of the future is emphasized in a letter of June 10, 1938, by Frank Howard to Dr. Butefisch of I. G., outlining the policy to be pursued by S. I. G. in exploitation of the pooled Standard-I. G. patents as follows:

"We feel very strongly that it is to the advantage of our group to organize the first general plan of handling this catalytic development and licensing situation. If we can work the matter out along the lines indicated in these memoranda, we may find it to our advantage to offer the same general scheme, with any necessary adjustments of the figures, to some other strong and aggressive oil companies who may be expected to contribute something worth while to the catalytic cracking development within the very near future. The pattern we are now working on would appear to be one which would permit us to undertake other negotiations without any further complications, merely fitting each new company in by adjustment of the figures as to amount of royalty, or period over which royalty should be paid."

This letter shows very plainly that what Standard sought at the time was an agreement, not existing patents, and that is again emphasized in this description by Mr. Howard of Standard's patent position:

"The other oil companies mentioned have, so far as we know, no real patent or technical assets of any description up to this moment, although doubtless they have some patent applications" (exhibit 134).

The nature of the agreement and its scope as a cover-all is further reflected by the fact that the parties themselves were under great confusion as to which of their patents fell within the negotiations. Bruce K. Brown, general manager of research and development of Standard Oil Co. of Indiana, wrote to Mr. Howard on November 18, 1938:

"* * * I am planning to bring a list of our patents and applications in this field to New York with me; the list will also include a one- or two-sentence description of the subject matter of each case.

"In further considering this matter, Bill Plummer and I have found it difficult to decide just what to include and what to exclude from the figure, although I think that the figure wired you is on the high side.

* * * * * * *

Digitized by Google

"* * * We have two other questions which are hard to answer. First, how many of our hydrogenation applications would cover intermediate zone processes, and, second, how many of our patents for applications directed primarily at thermal cracking would be infringed by catalytic cracking.

"We have not made any attempt to solve these problems and will not do so until after I have talked to you more on this subject" (exhibit 135).

The intended scope of C. R. A. was stated to H. P. members, at the time of the proposal to join H. P. to C. R. A. directly, in Mr. Howard's letter to them on December 6, 1938, as follows:

"* * * A solution was proposed along the following lines. S. I. G. would acquire the rights of all the interested parties in the entire field of catalytic refining, with and without hydrogen" (exhibit 136).

In a memorandum by Mr. F. R. Loofbourow of the Standard Oil Development Co. of August 21, 1939, the scope of the C. R. A. negotiations was thus stated:

"Since the technical knowledge of the parties relating to catalytic cracking would necessarily be applicable to a very large extent in processes of catalytic reforming and catalytic gas reversion and alkylation, it was necessary to bring these processes under the same arrangement; and this was done by making the arrangement cover the entire field of catalytic refining which includes all of the above processes" (exhibit 137).

Standard's Use of the Hydrogenation System To Promote a C. R. A. Agreement.—The relationship of the C. R. A. proposals to the hydrogenation system are thus explained in an unsigned Standard memorandum of October 20, 1938:

"The stock of Hydro Patents Company was purchased by eighteen potential licensees of the process—that is, practically all U. S. refiners who had, at that time, a charging capacity in excess of 20,000 Bbls./Day. In addition to purchasing stock in Hydro Patents (the allotment being proportionate to charging capacity) each of the companies accepted a license from Hydro Patents, royalties being on a fixed scale but payable only on use of the process. The Jersey operating companies accepted licenses from Hydro Patents, the same as all other large oil companies. For business outside of the United States and Canada, Jersey and I. G. organized a somewhat similar corporation called "International Hydrogenation Patents Company." Shell later bought an interest in this foreign development.

"As the result of this arrangement practically all U. S. refiners are obligated to pay royalties to Hydro Patents (for the account of S. I. G.) if such refiners *use* the hydrogenation process, *as the same is defined*, in their license contracts with Hydro Patents. *Herein lies a point of uncertainty which makes it necessary to include Intermediate Zone Processes* in the present contract."

* * * * * * *

"In years subsequent to the signing of these contracts it has been discovered that various processes for catalytically refining oil are improved to a greater or less extent by the *mere presence* of hydrogen, although the analysis of the products leaving the reaction zone does not indicate that any of the hydrogen present was actually absorbed by (reacted with) the material undergoing treatment. For example some catalytic processes for reforming naphtha involve fundamental chemical reactions of a nature which *give off* instead of absorbing hydrogen *and yet* the process is greatly improved by *adding* extraneous hydrogen to the stock undergoing treatment.

"Note that the process above described is fundamentally a catalytic cracking process, yet the same catalyst which produces the beneficial result is able—if hydrogen is present—to produce a still more beneficial result. I. G.'s technique of using hydrogen and catalysts together to effect a useful result on some third material (commonly thought of as "hydrogenation") has merged indissolubly with another technique—namely that of catalytically cracking petroleum. Note also that a process of this type does *not* come within the scope of Hydro Patents license contracts because it does not cause " a definitely determinable hydrogenation" of the naphtha" (exhibit 138).

The categorical statement at this early date, October 10, 1938, that processes involving addition of hydrogen without net consumption of hydrogen did not come within the Hydro Patents licenses is worthy of note. Standard, nevertheless, adopted a policy of playing up to Hydro Patents members the possibility that perhaps their licenses did tie into these intermediate zone processes.

At an early stage, a proposal was evolved that all parties place these intermediate zone processes in S. I. G. and that S. I. G. arbitrate to what extent royalties therefrom were hydrogenation royalties—all, of which, of course, were

Digitized by Google

payable to S. I. G. The proposal included a split of hydrogenation royalties that would lend attraction to the new set-up. The proposal was thus explained by Mr. Howard in a cable from Berlin of August 18, 1938, to Mr. Russell as follows:

"Retel sixteenth have further tentatively agreed with I. G. as follows: Firstly intermediate field defined as catalytic heat treatment process with added hydrogen in which there is no net consumption of hydrogen. Secondly all parties agree to assign rights to Standard-I. G. Stop. Standard-I. G. will decide whether such processes under hydrogenation field. Thirdly, if process within hydrogenation field one half royalties retained by Standard-I. G. other one half go to catalytic cracking unit and are apportioned as other revenues from catalytic cracking license. Fourthly if process not within hydrogenation field shall be licensed exclusively by catalytic unit under terms no more favorable than provided in catalytic cracking agreement and no more unfavorable than in existing hydro patents agreements. Stop. (exhibit 139).

On the same day Mr. Howard wrote Mr. Russell from Franzenbad, Czechoslovakia, describing the use to be made of the intermediate zone as a means of bringing pressure upon H. P. members to bring them into a general agreement on catalytic refining. The letter so states in terms as follows:

"I think we have made a great step forward in the proposed settlement of this intermediate processes question. I believe the mechanism of settlement under which the royalties are, in effect, pooled between the catalytic unit and Standard-I. G. in this intermediate zone will give us so much flexibility in the handling of processes in this field that we will be able to meet almost any situation. It will tend to tie together the Hydro Patents group and the catalytic group, and we might eventually hope to get most of the members of the Hydro Patents group into the catalytic group. Under these conditions their sympathies would naturally be in the direction of deciding the debatable cases in favor of the catalytic group where the royalty rates were lower.

"I think we also now have a very good situation to put up to the Shell people. We can agree with them that, if they will come into the catalytic group, we will put I. H. P. into the same position as Standard-I. G., that is, pool its revenues with the catalytic unit group for foreign licensing in the intermediate zone. Of course, everything depends on the real extent of the patent protection which I. G. already has and which the group can acquire in this intermediate zone. If we can show even a fairly good position there, I believe we now have provided ourselves with a lever which will consolidate our position in the catalytic field itself, in which the patent protection is apt to be less satisfactory.

"Like most of our major problems, we were rather slow to see this one, but I believe we now grasp it rather fully, and we have at least made a start on a final solution in which we utilize to the very best advantage our hydrogenation position in connection with the newly developing catalytic field" (exhibit 140).

The alternatives thus facing the H. P. members were summarized in the last-mentioned memorandum of October 10, 1938, as follows:

"Finally, it must be remembered that the patents covering hydrogenation generally which are owned by S. I. G. contain claims drafted in the usual manner without any regard for the artificial definitions in later-drawn contracts and that some of these claims may be infringed equally well by the operation of catalytic processes in which hydrogen is present but not consumed.

"Let us assume that a refiner (licensed by Hydro Patents) has independently developed a catalytic reforming process in which hydrogen is introduced but not consumed. If S. I. G. owns patents which are infringed by this process, the refiner has only three alternatives: (1) To seek to have the process regarded as coming under his license and hence to pay royalties; (2) assuming that the process is *outside* the contract, to negotiate a special license for it from Hydro Patents—and hence to pay royalties; (3) to 'fight the patents'—but he cannot do this so well if the court feels that the process does in fact fall under his license" (exhibit 138, supra).

Thus the hydrogenation patents would offer a threat, either through the hydrogenation licenses or outside them, and in either case enhanced by the existence of the agreement, and would exert pressure upon members to come to agreement with the C. R. A. pool.

From this stage the record shows that Mr. Howard sought to swing the hydrogenation group as a body either to tie the intermediate zone definitely into the hydrogenation plan and subject to all the group agreements or to obtain group action by the Hydro Patents members definitely tying the intermediate zone into C. R. A.

Digitized by Google

On December 6, 1938, Frank Howard sent to all H. P. stockholders an announcement of negotiations on the new processes. The letter raised a general question as to the relationship between hydrogenation and catalytic refining with hydrogen, and outlined the proposal to tie together licensing in the intermediate zone and outside, and to have S. I. G. arbitrate the rights of H. P. He approached the possibilities as follows:

"A solution was proposed along the following lines: S. I. G. would acquire the rights of all of the interested parties in the entire field of catalytic refining, with and without hydrogen. It would hold these rights fully subject to its agreement with Hydro Patents Co., so that to the extent any of the rights might subsequently be held to come within the scope of the Hydro Patents agreements, the hydro agreements could attach themselves and become automatically effective. This solution has been accepted by all of the interested parties" (exhibit 141, supra).

On January 11, 1939, Mr. Howard wrote to H. P. stockholders again posing the catalytic refining question generally. I quote therefrom:

"Standard-I. G. Company advises that the following companies have agreed to cooperate technically in the development of the catalytic processes referred to in the letter in question: I. G. Farbenindustrie, A. G., Anglo-Iranian Oil Co. Ltd., Standard Oil Co. (New Jersey), Standard Oil Co. (Indiana), The M. W. Kellogg Co.

"Standard-I. G. Company will have the right to license the inventions of these companies in the field of catalytic refining, which includes catalytic cracking, catalytic viscosity breaking, catalytic reforming, and certain processes auxiliary to the above. The M. W. Kellogg Company is acting as the technical center to coordinate the research work of these companies, especially in its practical application to the construction of plants.

"The catalytic refining processes in question may be carried on either with or without added hydrogen, depending upon the results sought, and the nature of the catalyst employed. Where hydrogen is added, *there arises the question* of whether the process comes within the scope of the hydrogenation agreements of the Hydro Patents Company. To clarify this issue the parties mentioned have drawn a line between cases in which the hydrogen is consumed and cases in which there is no net consumption of hydrogen although a beneficial effect is obtained from the presence of the added hydrogen. The latter class of processes has been identified as 'Intermediate Zone Processes' indicating that they occupy a status intermediate between the conventional hydrogenation processes in which hydrogen is added and consumed, and the catalytic processes in which no hydrogen is added.

"*In recognition of its legal and moral obligation* to Hydro Patents Company, Standard-I. G. has stated that it proposes to offer to Hydro Patents an agreement under which both parties interpret the existing hydrogenation contracts *as covering* the intermediate zone processes; and at the same time, make certain changes in the provisions of the hydrogenation agreements themselves in their application to the licensing of the 'Intermediate Zone Processes.' Presumably, the offer of Standard-I. G. to Hydro Patents would be conditioned upon its acceptance, not only by the Hydro Patents Company as such, but also by some stated proportion of the Stockholder licensees of Hydro Patents. No practical progress can be made in connection with the foregoing question until concrete proposals are submitted by Standard-I. G. and these proposals in turn should be based upon adequate information concerning one or more 'Intermediate Zone Processes' which the stockholders licensees of Hydro Patents Company could examine and evaluate." [Italics supplied.] (Exhibit 142.)

Thus at this date Mr. Howard proposed that the intermediate zone be considered as included in hydrogenation.

Practically the whole of the annual meeting of stockholders of H. P. held on February 7, 1939, was devoted to discussion of the intermediate zone, and whether it should fall to H. P. or C. R. A. At this time no definite report or proposal to H. P. had not yet been made by the C. R. A. group. Mr. Howard presented the issue as follows:

"In brief, our plans are that we propose to present to this group as soon as we have the data, a statement of the technical and economic status, and so far as we know of it, of the patent position with respect to the first intermediate zone process as referred to in these documents which sticks its head above the horizon as a practical process which has some commercial importance. Until that condition arises, you gentlemen have nothing on which you could make a

Digitized by Google

decision as to your policies, I believe, and also we have nothing that we can offer directly in the way of suggestions. All that can be done at this time is to lay the background before you, because against that background you will have to reach your decision, both as director (those of you who are directors of Hydro Patents—you will have to decide what Hydro Patents, as a company, will have to do with respect to these processes) and in your individual capacities, as stockholder licensees, you will each have your own problem as to what position you wish to take" (exhibit 143).

Several members took the position that they did not believe the hydrogenation agreements applied where hydrogen was not consumed and did not wish to see the agreements enlarged. Shell's position was largely similar.

The direct question was asked: What did the hydrogenation definition cover? Did it cover use of hydrogen without consumption of hydrogen, or was it a question unresolved as yet?

Mr. Howard answered the question from both sides:

"It is a question that is perhaps only possible to answer with respect to a particular process which has been carefully analyzed. I think that, as a generality, we would all say that there might be processes in which hydrogen is added to the reaction zone and which it would be very difficult for any fair-minded person to call hydrogenation processes.

"On the other hand, it has seemed to us that *there might be processes which a fair-minded person would say were covered by the definition of hydrogenation and in which there was no net consumption of hydrogen*, and in view of that situation, all that we could say was that it seemed an open question and that open question, so far as we could see, could only be finally answered with respect to a particular process when that process was presented." [Italics supplied.] (Id.)

We shall see that by 1941 Mr. Howard found the latter interpretation practically inadmissable, though still one on which he did not let himself appear squarely to override a dissenting voice. At the 1939 meeting the emphasis was that the question was distinctly an open one.

Mr. Howard moved on to assert that the question was one requiring a new offer by I. G. and acceptance by H. P.

"Perhaps we could make a little progress if I told you that in discussing this matter with the I. G. it seemed that the procedure would have to be about as follows: *There are objections on the part of I. G. also to any widening of this definition* on the rights of the Hydro Patents Company and one of the principal objections is that under the existing agreements the Hydro Patent stockholders who constitute pretty nearly the American oil industry *won't pay any royalty at all* after 1947 and 1947 begins to look as if it was not so very far away, so that I. G. aren't at all happy about that provision in the arrangement, and to get their adherence to any change in this plan, it probably would be necessary to make some thorough-going changes in the whole system. [Italics supplied.] (Id.)

I call attention to this statement that royalties cease, and mention its reiteration on page 5 by Mr. Howard as follows:

"That is right, the rights continue and the royalties cease. No new rights go in" (id.).

At the stockholders' meeting on January 7, 1941, Mr. Howard was plainly anxious to apply more pressure on H. P. members to release all claim to the use of hydrogenation patents in the intermediate zone. He then for the first time brought up the proposition that although I. G. and S. I. G. had no right after 1947 to claim royalties from H. P. or its members, nevertheless H. P. itself could charge royalties on the licenses from it to its members. Since Standard held 40 percent of the stock of H. P. and other C. R. A. members held sufficient additional stock to give control of H. P., it looks as if Standard intended that H. P. members should never be released from royalties after 1947 in any event, or at least should not be able to count on being released. The picture on this subject is certainly a confused one.

The most arresting point to this statement of Mr. Howard's, however, is its representation that the consent of I. G. was necessary to change the hydrogenation agreement. Mr. Howard's words were "any widening of this definition." Standard had entire control of all of I. G.'s oil industry patents with the exception only that as to hydrogenation I. G. must receive 2 cents per barrel (as compared with 5 cents on feed plus 5 cents on product then charged to H. P. members). As to the other oil patents, it was provided that there be a

Digitized by Google

fair royalty and that I. G. be paid 20 percent of the royalty received. It is true that oil patents outside of hydrogenation, acquired by I. G. after 1941, were to revert to I. G. after 1947, but subject to granted licenses. Standard was negotiating with I. G. to extend the joinder of Standard and I. G. patents under C. R. A. beyond that period. But none of that was explained to the Hydro Patents members. It was not explained that Standard in fact had the power to grant licenses to members under any and all of I. G.'s oil patents which should issue before 1948, and that the licenses would be good for the life of the patents. Standard was thus not only using its agreements with I. G. for their power to advance Standard's interest, but was at the same time hiding those agreements and in effect misrepresenting its own interests in the subject submitted to H. P., of which Mr. Howard was president and director.

Mr. Howard then stated the process question in general terms, leaving the meaning of the definitions up in the air. We may note the statement by Dr. Delbridge, of Atlantic, agreeing with the position Mr. Howard had stated:

"We believe it is quite possible to have hydrogenation without any apparent consumption of hydrogen" (id.).

Representatives of other companies expressed uncertainty. Mr. Howard's final opinion of the status of intermediate zone was expressed in these terms:

"I think it is so clearly a debatable question that in the final analysis every company represented here, without criticism at all, can be expected to answer the question in the direction of where its own self-interest lies, and I don't think there is any escape from that conclusion. I think it is just one of those questions which is bound to be answered that way, so really what you gentlemen have to consider, I think, is not so much—at least this is my own conclusion—I think you have to consider not so much these detailed questions of chemistry and law but where does your interest lie?" (id.).

Again, we shall see that in 1941 Mr. Howard lectured against any such position. Even on the question of self-interest Mr. Howard appeared to be playing both sides as follows:

"Just to turn the clock back a little, of course, when the Hydro Patents Company was organized we all had the idea that through this instrumentality we could accomplish something that would be in the interest of all the companies who joined it. The Hydro Patents Company's practical importance has been almost nil in the oil industry because of the nonuse of the hydrogenation process in the United States under the conditions of our industry.

"It now looks, this is only a forecast and not at all a reliable one, but it now looks as though at least the larger part of the technique and a large part of the patent rights which were in the field of the Hydro Patents Company we all considered at the outset may apply to this so-called intermediate zone in which there is use of hydrogen, addition of the hydrogen, but no net consumption of the hydrogen. We have developed the situation so far in our discussion that we see that it is quite possible I think to take either road we wish. We can either say 'No; it is no part of the cooperative effort. We are through that and we don't wish to expand in any way the field of the Hydro Patents Company,' or we could take the other road and say, 'Well, we have a vehicle through which perhaps 80 percent to 90 percent of the American oil industry can cooperate in the building up of contacts and the cross-licensing of patents in a field of considerable interest to us.' If the latter really seemed worth while, I can't answer the question, but if that latter seemed worth while, if the cooperative effort to do anything in this field seemed worth while, the Hydro Patents Company would be the logical channel through which to do it probably'" (id.).

There was then an exchange in which stockholders showed that they were ignorant whether, and were particularly concerned whether, Standard and I. G. sought only to impose group obligations over a general field of operations under a new and broad definition, or whether they actually had a definite and complete process to offer. Mr. Howard did not go into particulars but assured there was a complete process under I. G. patents. He asserted, however:

"Yes; but I think I can tell you gentlemen this, that so far our I. G. friends have not seen any way under which they would be willing to agree to putting their rights, whatever they might be in such a process, into Hydro Patents except under a definition; in other words, I. G. would not be interested in this type of a development except under a definition, I think" (id.).

Again, I. G.'s consent was not necessary for "putting their rights into Hydro Patents," except for licensing after 1947 of that class of patents as to which Standard was to lose control after 1947—and that was an arrangement that

Digitized by Google

Hydro Patents members did not know of. It is a sad commentary that our largest industrial company should promote one of the most important patent pools upon this character of half truth.

Objection was made to dealing with the new rights by a general definition instead of a more particular process description. Mr. Dearborn said:

"If the proposal was made with reference to a process then the definition should not say a process in which so and so, without defining the process. I think you should define the process" (id.).

The ensuing exchange tells us a great deal about the use of definitions of fields in patent-licensing agreements. The definition promoted by Standard covered the general field of catalytic refining, using hydrogen without net consumption of hydrogen. In its support, Mr. Howard employed all the arguments usually used in justification of the patent pool generally. Against it were presented the criticism that, in the first place, the definition was much too broad for any given process, and that in the second place there was no assurance Standard or I. G. had patents rendering the whole of this field available to licensees. It is small wonder that Mr. Howard's proposals were keenly criticized, since an agreement using the proposed definition would freeze the relative balance of advantages in the whole field defined, for a long time to come among all the companies who should be forced to become subordinate insiders or more subordinate outsiders of the new C. R. A. Because of the light thus thrown on the significance of C. R. A., I believe it necessary to quote here at length. Beginning with the objection to the definition the minutes continue:

"Chairman HOWARD. On that point we might not be in agreement. Yes. The decision would be based upon a concrete process ready for use but the definition would not be as limited as the process itself. It couldn't be, in the nature of things. We all know that who have had any experience because it is obviously possible to change any particular process which is offered in many particulars and the only thing that you can do if you follow the lines that we have been all following for so many years is to attempt to define a field which covers the process in question. What we would try to do in the primitive days of patent licensing, people used to talk about licensing a process and its improvements and of course no one ever knew what improvements were and in dealing with that problem over the last fifteen years the oil industry has developed the technique of defining fields to attempt to accomplish what the old patent lawyer meant when he said improvements" (id.).

I intervene to add that the new technique of defining fields instead of referring to improvements does not seem to have accomplished much in the way of remedy for Mr. Howard's complaint that "no one ever knew what improvements were," for it doesn't appear, as we shall see further in 1941, that anyone ever did find out what the hydrogenation field meant. The only thing we can be certain that the new technique of defining fields did accomplish was to encourage initial patent advantage, extending it over patent positions of others, and giving it a self-perpetuating capacity. The old term "improvements" at least gave a fair standard of reference. The definition of fields gives no standard but only a means of asking as much as you are strong enough to get. It can be used for far different purposes than the old term "improvements." I continue the quotation:

"Mr. DEARBORN. I follow you in that, but not in this: It seems to me that if the field is defined as a process in which hydrogen is introduced and not consumed, that field is then an extremely broad field, and Hydro Patents would not necessarily be in a position to present the processes, the various kinds of processes, which might fall within it. It is too broad altogether.

"Mr. BROWN. You mean others might have the rights?

"Mr. DEARBORN. Yes; it seemed to me as to the definition that if I. G. wanted to make a proposal it should be a defined field but confined to a field under which they had the rights under not only the patents covering the use of the hydrogen but also the process per se.

"Mr. BROWN. I see your point there. There always could be someone who held patent rights in that field, but what we are talking about doing, whether we decide it one way or another, is in effect a decision of practically the whole American oil industry and would cover all of the patents so they would have to look out for the Hydro Patents licensees to find that and——

"Chairman HOWARD. Yes; I think Mr. Brown is correct. The question we should think about answering in principle is whether we do desire to create a situation under which we will have the minimum trouble with outside patent rights. That is one of the benefits, probably the principal benefit, of this type of cooperative undertaking. It simply means that the basis of payment to the Hydro

Digitized by Google

Patents Company, and through them the Standard I. G., must be one that is acceptable and, if that is agreed upon and acceptable, then the obvious interest of anyone is to see that they don't have to pay anybody else if possible."

Again I must intervene to ask: What other meaning can there be to this statement than that if the whole American oil industry will agree to pay royalties to Standard-I. G., and if the whole American oil industry will pool all of its patents in the broad field of the definition, and freeze that arrangement over a long term, then the industry won't have to get a license from anybody else. The logic is admirably effective. If you pay Standard-I. G. for the privilege of your renouncing infringement suits and of having everybody else renounce them, then you won't have infringement suits.

The discussion of definition of field versus definition of process continued:

"Mr. DEARBORN. I think we are looking at it a little bit differently. I look at it at this moment, that the use of the hydrogen atmosphere is perhaps a feature, the process might work with it and might work without it.

"Therefore, I speak of the process as distinct from the use of the hydrogen atmosphere, and I think the process might be something available elsewhere and that it might be licensed by some group or another and yet the use of a hydrogen atmosphere might be covered by some of these patents, I don't know, or it might not.

"In other words, is the tail going to wag the dog or is the dog going to wag the tail? In other words, is the definition going to be so definite as to the entire process that the thing will mean something and anybody can use the process in its entirety under the license?

"Mr. BROWN. As I understand this point: Take a patent on catalytic reforming. Take X as a catalyst. Someone owns a patent covering it; there is a catalytic reforming using X as the catalyst, and assume I. G. offers that. You want to know what the license of the I. G. is unless you have a license under the first-mentioned patent.

"Mr. DEARBORN. Yes.

"Mr. BROWN. But when we license under definition, assuming we agreed to anything, any definition of this intermediate zone, then the tail wouldn't wag the dog.

"Mr. DEARBORN. The dog is thrown in.

"Mr. BROWN. The dog goes with the tail.

"Chairman HOWARD. Is what is in Mr. Dearborn's mind the fact that some one of the stockholder licensees themselves might own some of the rights in this and they might feel that they were the dog and what the I. G. might contribute was only the tail?

"Mr. DEARBORN. Yes.

"Chairman HOWARD. Even that, I think, does not get to the root of this question of cooperation or non-cooperation in Hydro Patents because that is simply a trading question of who has the best position. If the I. G. rights, those of Standard I. G., were not complete and the process required a license under the rights of Texas Company as well, obviously the Texas Company has got to receive some consideration or it won't go into the arrangement.

"Mr. DEARBORN. I don't want to continue the argument unnecessarily; but I think you all have my point, and that is that when we went into the hydrogenation agreement with the Hydro Patents Company, we felt distinctly that I. G. and, therefore, the Hydro Patents Company, had a very substantial position covering the field of hydrogenation, that that was a process in itself and a complete whole and a useful process. that the hydrogenation was the meat and substance of the process and now, I may be entirely wrong, but I regard an intermediate zone, the use of a hydrogen atmosphere, as a feature to be attached to a process and not a process.

"I may be all wrong about it. That is the way I regard it and therefore I am trying to inquire whether you think the Hydro Patents can gather together enough patent strength to cover the processes to make it desirable, to also put in the hydrogen atmosphere.

"It would seem to me in that case that Hydro Patents would better go the whole hog and take the processes with and without hydrogen.

"Chairman HOWARD. Well, that latter is a possibility. It is a very ambitious one, but it is a possibility. The first answer to your question is that the attitude of the Standard I. G. Company was that the processes it had in mind in discussing with you gentlemen are processes which it did control completely. It didn't require any rights from anyone else at all.

Digitized by Google

"Mr. DEARBORN. Then the definition of it ought to be drawn to reflect that process" (id.).

Dr. Delbridge then raised a question which went directly to the underlying forces—the existing contractual commitments between some of the H. P. members. He asked:

"Isn't this pretty intimately tied up with the possibilities of differences between the Loyalists and Insurgents and catalytic cracking, regardless of hydrogenation? Don't the things fit in together? To an outsider it looks as if you were just scratching the surface on this thing" (id.).

Mr. Howard replied that he had considered having H. P. centralize licensing of catalytic refining generally but that since Socony had its own arrangemets for the Houdry process, and Shell, Texas, and Sinclair had interests to protect in Universal, therefore—"we already have two groups which are completely out of the sphere of Hydro Patents Company and who have gone along and made their own arrangements in catalytic cracking and it just looked hopeless to try to do anything with that from a general industry standpoint."

Mr. Howard added: "If I were ten years younger I might want to take on my shoulders the job of making Hydro Patents do something constructive for the oil industry in catalytic cracking; but I don't think I have the energy. If you have any ideas, though, Dr. Delbridge, maybe we can make you president of Hydro Patents and let you go along and clean that stable" (id.).

The role of the Hydro Patents Co. in the formation of C. R. A. may be followed from this stage in the successive C. R. A. memoranda. In the London agreement of October 12, 1938, between Standard, I. G., Indiana, and Kellogg, with the partial participation of Anglo-Iranian, the parties "recognized" that some intermediate zone processes might be deemed to fall under the hydrogenation agreements and some might be deemed to fall outside those agreements. It was accordingly expressly agreed that if the oil company members should make use of intermediate zone processes under such conditions that they must pay royalties to Hydro Patents within the United States they would not have to pay any royalties under the C. R. A. agreement.

The further concession to oil-company members was also made that should they be required to pay royalties to H. P. in respect of intermediate zone processes, in that event S.-I. G. would refund to them approximately one-third of the amounts received by it from Hydro Patents Co.'s use of these payments. Since S.-I. G. was in fact entitled to receive from H. P. the whole of such payments to it, S.-I. G. in result would receive two-thirds of the royalties paid by oil company members in such circumstances and would rebate them one-third. This concession offered further inducement to the oil companies invited to become members of the C. R. A. group.

This special protection against duplication of royalties and this concession on hydrogenation royalties were included in the terms of each of the subsequent C. R. A. memoranda until the final draft of July 9, 1940.

Meanwhile, arrangements for the cooperation of Shell and Texas in C. R. A. were worked out. Because of their special interest in Universal a settlement with that company was also formulated. All three were brought within the C. R. A. memorandum of August 15, 1939. Under its terms the parties proposed to throw into Hydro Patents Co. itself the licensing rights for the C. R. A. field, but with the right to license only its own members. The right to license nonmembers was to be given to Universal. The effect of such an arrangement would have been that H. P. would hold the right to grant licenses to the large oil companies of this country, and Universal would hold this right as to the small companies. The foreign licensing rights were to be thrown into I. H. P.

After the war intervened and prevented a contract which would include both British and German companies (exhibit C. R. A. 21), Standard resuscitated the C. R. A. negotiations by its representation to the parties that it had taken over I. G.'s rights and the power to carry out I. G.'s obligations in the C. R. A. field, and would do so under a new corporation to be formed under the name of C. R. A., Inc.

A C. R. A. draft of February 8, 1940, was worked out. For some reason the centralization of American licensing rights in H. P. disappeared from this memorandum. H. P. never thereafter reappeared in C. R. A. Thereafter Standard sought to disentangle any claim that H. P. members had on hydrogenation.

By the time of the final draft of July 9, 1940, Standard, as we shall see further, had formulated the principles of a complete patent settlement with Shell abroad and a solution of the hydrogenation and other questions between them in this

Digitized by Google

country. Standard, representing its own and I. G.'s rights and obligations, Shell, Indiana, Texas, Kellogg, and Universal, with Anglo-Iranian as a party to exchange of licenses and information at favored rates, had arrived at a full basis of cooperation in C. R. A. The four American oil companies represented far and away the leaders of the industry in cracking capacity in this country. For illustration, I introduce a Temporary National Economic Committee chart reflecting relative positions as exhibit 144. Shell and Standard were the two great international oil companies. H. P. had been eliminated. In these circumstances, all previous provisions dealing with the contingency that royalties on intermediate zone processes might be found payable to H. P. were eliminated from the face of the agreement, and were preserved only in separate assurances to the parties.

Apparently, in these circumstances the parties intended to take a determined stand to deny that the hydrogenation field had anything to do with intermediate zone processes, and to definitely disentangle C. R. A. from the hydrogenation agreements. This final draft thus minimized the connection with hydrogenation by eliminating all reference to it except where named in the definitions as one of the processes excluded. The questions raised with the Hydro Patents members were not, however, done with, as we shall see.

I. H. P. remained a party to the final agreement, for I. H. P. served as a vehicle of cooperation between Standard and Shell, being owned equally by them, and did not involve any complication in the form of rights of third parties, except the I. G. royalty interest, which was taken under Standard's wing.

The new course thus steered by Standard in organization of C. R. A. was early asserted. Mr. Howard announced to H. P. members that the use of H. P. for C. R. A. was no longer considered and invited a determination by H. P. that intermediate zone processes did not fall within the hydrogenation field. He combined this announcement with an offer of a special credit to hydro patents members upon intermediate zone processes through their hydrogenation licenses, and also as an inducement to join the C. R. A. pool. Whether the hydrogenation licenses had any real claim on the intermediate zone processes or not, it would seem that something had to be done to disentangle those processes from the confusion Mr. Howard had already wrapped around them in his overtures to the hydrogenation group. In this connection, in a memorandum by Mr. William B. Plummer, of Indiana, dated October 16, 1940, we see the following comment on the credit offered H. P. members on intermediate zone licenses:

"Is it fair from the standpoint of normal third party (non-H. P. stockholder) licensees of C. R. A.? I doubt it, since I know of no consideration flowing from H. P. stockholders to justify the rebate, other than their assent to Standard-I. G. getting itself out of a tangle * * *" (exhibit 145).

Mr. Howard's proposal was stated in his letter of October 9, 1940, to H. P. directors, with copies to stockholders, as follows:

"* * * Standard-I. G. further advises that in the course of its more recent negotiations it found it necessary to give up the idea of proposing that Hydro Patents act as the vehicle for licensing the Hydro Patents stockholder licensees in the Intermediate Zone. However, in spite of this fact and in spite of the fact that the reaction covered by the definition of the Intermediate Zone is different from Hydrogenatiton, Standard-I. G. feels that the Hydro Patents stockholder licensees are, on account of their interest in and contributions to hydrogen technique through their participation in Hydro Patents, entitled to special consideration.

"Standard-I. G. therefore proposes that if Hydro Patents finds the proposed distinction between the Intermediate Zone and Hydrogenation acceptable each of its stockholder licensees should, in paying royalty for the use of Intermediate Zone processes under licenses which include the patent rights of the Standard-I. G., be granted a credit by Standard-I. G. equal to one-half of the "fixed royalties" payable by Hydro Patents to Standard-I. G. under Article V of Contract B of the Hydrogenation agreements" (exhibit C. R. A. 146).

This proposal was not met with unanimous approval. Objections were expressed, as witness letters from California (exhibits 147 and 148), Cities Service (exhibits 149 and 150), and Gulf (exhibit 151).

A resolution was put through a meeting of the H. P. directors reciting that it was the sense of the board that the intermediate zone did not fall within the hydrogenation definition, but referring the question to the stockholders. Similarly adopted, but referred to stockholders, was a resolution that a committee should consider the feasibility and wisdom of liquidating H. P. (exhibit 152).

The stockholders met on January 7, 1941. It turned out there was such general disagreement on what should be done as to the intermediate zone that no

Digitized by Google

vote was called on the resolution touching it. There was also general disagreement as to liquidation of H. P., but a resolution was adopted calling for appointment of a committee.

At the outset, the stockholders' meeting brought about a distinct qualification of the resolutions of the directors. I quote from the minutes:

"Mr. ISOM. I'd like to make a statement at this point, as a Director. At the Directors' meeting at which this Resolution was supposedly adopted, this matter came up in rather a rush at the last minute. The definite resolution was not before us. I understood that we were voting to unanimously submit the question to the stockholders but it was not my understanding that we unanimously agreed as to the substance.

"Mr. LAMONT. I was under that same impression. In other words, when I voted "Yes" I was under the impression it was a vote yes on the question of submitting these questions to the stockholders rather than a yes vote as a Director on the substance of the proposal itself.

"Mr. HOWARD. There was no opportunity to secure approval of the minutes of the meeting in question so the statement is tantamount to a correction of those minutes.

"Mr. LAMONT. Just to make it of record.

"Mr. HOWARD. I think the stockholders all understand the position now" (exhibit 153).

The proceedings at this stockholders' meeting are extremely interesting. Each instance of clash of point of view is a practical representation of a patent pool in the making. Mr. Howard's objective stands out clearly from a reading of the minutes. He sought from Hydro Patents members a relinquishment of all claim upon the intermediate zone process under their contracts and at the same time he sought to avoid a drawn issue with them, or the creation of any impression that he was driving a hard bargain with the stockholders, and sought their favor for association with the C. R. A. project.

On the part of the stockholders, the most positive reaction was expression of a desire for further information as to the nature of the processes involved, the fair meaning of hydrogenation, and the real scope and effect of an amendment that would expressly exclude intermediate zone processes. They particularly wished to know why licensing of intermediate zone processes at such low rates as C. R. A. contemplated could not be worked out through the Hydro Patents Co. under the licenses held by stockholders. The question was especially pertinent, since Mr. Howard had previously emphasized the close relation between hydrogenation and intermediate zone, and since indefinite proposals had been made from time to time that the development be carried out through Hydro Patents. The minutes afforded poignant illustration of these conflicting views and present a commentary on Standard's policies and methods as expressed in the responses given by Mr. Howard.

On the matter of additional information desired by members, we see that Mr. Isom, of Sinclair, said of the resolution of the board of directors as follows:

"As a director, I don't think I had enough information before me at that time, to pass on the particular merits of the question." A question by Mr. Borden, of Cities Service, showed the importance of information to members as follows:

"I should like to say that I wrote up here asking for information concerning what effect this resolution has with reference to the company, and I haven't much of an idea. I have your letter and I have read it, but I don't think that I understand what the stockholders are giving up if they approve this and what the corporation is losing if they give it up. What is the cause for bringing up this question? What is behind the whole thing? We haven't any background" (id.).

Mr. Adams, of Sinclair, pointed to the quandary imposed upon stockholders in their inability to evaluate the hydroforming process, which Mr. Howard stated was the principal intermediate zone to be affected by the proposed resolution. Mr. Adams said that he wished his remarks to "indicate how very little we know about the intended effect and the real purpose of the resolution. In fact, our position would be that at the present time we do not have enough information to pass upon it or to be required to pass upon the resolution."

Mr. Cooke, of Gulf, complained as to the difficulty in choosing between the several interpretations of hydrogenation as stated by Mr. Howard. Mr. Cooke said of this difficulty:

"This points to the fact that the stockholders should be afforded an adequate opportunity to see all of the facts and to reach such conclusions as may be drawn therefrom."

Digitized by Google

There was a lengthy discussion from all sides as to the actual meaning of hydrogenation. Time and again it was Mr. Howard's response merely to reiterate the interpretation proposed by the resolution. He was scarcely in a position to reply categorically that intermediate zone, i. e., refining with the use of hydogen without net consumption of hydrogen, was not or could not be hydrogenation under any circumstances. Mr. Howard had too actively agitated the possibility that such processes might be hydrogenation. Furthermore, the proposal was then being made that Hydro Patents stockholders should receive a credit on intermediate zone royalties against their payments for hydrogenation. Furthermore, if such processes could not be hydogenation, there could be little need for asking the Hydro Patents Co. to adopt a resolution excluding them from hydrogenation. On the other hand, it was equally difficult for Mr. Howard to make the distinct admission that such processes could be hydrogenation, for he was promoting a resolution which would divorce them from the hydrogenation field. He was, furthermore, doing so in order to pool such processes with a different group.

In view of the uncertainty in which the question appeared, the real bargaining positions of the parties revolved around the stockholders' question asking Mr. Howard to explain why it was that the intermediate zone processes could not be developed through the Hydro Patents Corporation. Mr. Howard met this question from several sides. To begin with, he emphasized the high royalties that must be paid under the hydrogenation terms. He said in this connection:

"Those terms are $53 a Barrel in the way of a cash payment to the Hydro Patents Company by the stockholder licensees who propose to install, then a running royalty payment of 5¢ per Barrel on the input to the process and a royalty payment of 5¢ per Barrel on the gasoline output of the process. In addition, there is a payment provided in the companion engineering contracts which the licensees of Hydro Patents have—an engineering fee of 4% of the cost of the hydrogenation plant proper. Those are the general terms of the arrangement. All of those terms would apply to the Hydroforming process if it were within the hydrogenation structure. From a practical standpoint, those terms would be very burdensome terms for the licensing of a process of this character" (id.).

Mr. Howard pointed out that the proposed rate for hydroforming was "something like one-third the rate provided by the Hydro Patents contracts." He thus contrasted the alternatives as follows:

"Just viewing the thing as a practical problem—the Cities Service, if interested in Hydroforming—would it prefer to treat this process as under the hydrogenation definition and pay those amounts or treat it as not under the hydrogenation definition and accept a license under the 5¢ rate, or even say 'I don't need any license,' which it might do without any commitments one way or another" (id.).

Mr. Howard was asked why it was that the hydrogenation rates themselves could not be reduced for the purposes of hydroforming.

Naturally, Mr. Howard did not reply that the real reason was that the C. R. A. partners desired to cover the whole field of catalytic refining. He replied as follows:

"It might be possible to alter those terms. It is extremely difficult, particularly under present conditions, because there are foreigners who have interests in this matter, and it is not possible to cooperate actively with them under present conditions" (id.).

As in 1929, so in 1941 Mr. Howard confused the issues by this misleading reference to the necessity of consent by foreign interests. So far as this concerns I. G., then, except for the necessity of tying up the right to license I. G.'s patents after the year 1948, Standard could without I. G.'s consent reduce the hydrogenation royalties to 2 cents per barrel and set the royalties for other I. G. patents at any royalties fair for the process in question. Standard had no difficulty in making a definite offer to Shell to reduce its hydrogenation royalties in this country.

The reasoning on this question of frozen royalty rates is curious enough on its face. Mr. Howard represented to the stockholders that the rates were frozen in favor of other parties, and that there would be great difficulty in executing new agreements to unfreeze them. But though the rates for hydrogenation were thus to be considered as frozen, there was apparently, according to Mr. Howard's proposal, not the slightest difficulty in simply changing the meaning of hydrogenation so that the frozen rates would not apply. It is curious indeed that respect for another's right should limit their alteration in one way unsatisfactory to Standard but present no limit upon exactly the same alteration in a different way satisfactory to it.

Digitized by Google

The stockholders further raised the point that the stiff hydrogenation royalties were, under the agreements, to come to an end in 1947, so that there was a fair question whether their interests would be better served by high royalties for a short period or low royalties for a long period. Mr. Howard thereupon for the first time asserted that under the agreements the Hydro Patents Co. was free to charge its members after 1947. The threat was plain in view of the controlling interest in Hydro Patents Co. held by Standard itself and the other C. R. A. members. There was a sharp dissent. Mr. Howard's emphasis in the 1939 meeting on the cessation of I. G. royalties was quoted. The conflict in view was stated as follows:

"Mr. HOWARD. In 1947 Hydro Patents Company is relieved of all obligation to pay to Standard–I. G. any further royalties, but the individual stockholder licensees of Hydro Patents are not relieved of their obligation to pay Hydro Patents Company, so far as I know.

"Mr. COOKE. That was not our view, as we understand the agreements.

"Mr. HOWARD. I can only tell you that that was my understanding—my intention that the agreements had that effect" (id.).

At this time Mr. Howard was not only Standard's representative at the Hydro Patents Co. meeting, but he was also the president of Hydro Patents Co. and a director. Speaking in these capacities, he was apparently able to advocate the desires of Standard from any side that one approached the question, regardless of consistency. We have seen that in the 1939 stockholders meeting Mr. Howard frankly reduced the whole question of self-interest to be decided by each stockholder, in view of what Mr. Howard then represented as the entire impossibility of actually determining the meaning of the definition of hydrogenation. In the meeting of 1941 the question of decision by self-interest was handled from both sides. In his opening statement, Mr. Howard, upon the reasons we have noted, sought to prove that self-interest was not to be served by inclusion of hydroforming in hydrogenation and he therefore concluded:

"So that whereas as business people and human beings we probably all approach this question from a standpoint of self-interest, desire, or feasibility, we are ultimately driven through the practical consideration I have mentioned to start where we ought to have started and that is to look at the contracts to see if the process in question is really within the terms of the grants. We should now turn and look at the problems as open problems and that was in the main the discussion of the Board of Directors at their meeting. What was the interpretation of the technical definition in the contract and did the new process come within the terms of that definition?" (id.).

After getting nowhere in finding out what the definition of hydrogenation meant, Mr. Cooke, of Gulf, returned to the question of whether the hydrogenation royalties expired in 1948. Mr. Cooke made the point as follows:

"The question of time is as important as any because this is the first suggestion that I have ever heard of, in my limited experience with these agreements, that the royalties may go on after 1948 and certainly from an economic standpoint that would have a most important effect on the decision that Gulf Oil Corporation would make" (id.).

To this plain statement as to the royalties affecting the stockholders' choice, Mr. Howard replied with lofty repudiation of self-interest as a proper basis for decision. He said:

"It is perfectly natural for you to approach it from that standpoint, but I am afraid, without any disrespect, that that standpoint is really short-sighted and not practical—the standpoint of attempting to decide the selfish interest of each company and of Hydro Patents in approaching the technical problem of trying to decide a debated issue of what is and what is not hydrogenation—is a wrong approach, I believe, and if we once get ourselves wedded to that method of approach on these problems I am afraid this whole structure will be recognized as too cumbersome to be of any practical value to any of us" (id.)

In spite of the fact that in these relations with the oil companies representative of the American oil industry, from whom Standard had collected large sums for positions under the hydrogenation agreement, Standard resorted to every measure of persuasion and diplomacy to gain its ends, it is also clear that Standard did not intend to bring this agreement into court, which would indeed have been a complete departure from its policy adhered to to date, without exception, of never bringing to court either its contracts with I. G. on any subject or any of its pool agreements. In this meeting Mr. Howard refrained from taking any single fixed stand in direct opposition to the views or position

Digitized by Google

of any stockholder, and he made it clear that no irreconcilable stand would be taken. I quote:

"I am afraid that we will not be able to proceed with any of these plans against the resistance of any substantial proportion of the stockholder licensees of Hydro Patents, and if two or three of them feel that they are not being fairly treated in this matter, as far as I am concerned that ends the particular matter" (id.).

The stockholders might well have felt, as a result of the sessions of Hydro Patents seeking the meaning of the hydrogenation contracts, that they had been participating in the following dialogue in "Alice Through the Looking Glass":

" 'When I use a word,' Humpty Dumpty said in rather a scornful tone, 'it means just what I choose it to mean—neither more nor less.'

" 'The question is,' said Alice, 'whether you *can* make words mean different things.'

" 'The question is,' said Humpty Dumpty, 'which is to be master—that is all.' "

The quotation might well be carried through to its conclusion:

" 'When I make a word do a lot of work like that,' said Humpty Dumpty, 'I always pay it extra.'

" 'Oh!' said Alice. "She was too much puzzled to make any other remark."

Because of the general disagreement expressed, it was decided that no vote at all would be taken at the meeting upon the proposed resolution that intermediate zone processes be excluded from hydrogenation.

The resolution for appointment of a committee to consider the wisdom and feasibility of liquidating Hydro Patents Co. was passed, but not without further objection and criticism. The particular wish was expressed that before considering liquidation, Standard itself should make some definite proposal as to the ultimate arrangement to be made in respect of intermediate zone, or as to the particular objects to be accomplished by liquidation. However, the real effect of liquidation in connection with the intermediate zone question obviously was that Standard and the C. R. A. group, who were, in principle, now consolidated, would thus be enabled to negotiate a deal with each company separately for definition of such company's rights under its hydrogenation license. Standard would thus avoid the necessity of settling the question with all the oil companies at once. That had been desirable as the most complete creation of group obligation as to the intermediate zone, but in view of organization of the C. R. A. group it was no longer indispensable, and so long as group agreement could not be obtained it was better not to have to deal with the group.

I have no direct information on the subsequent developments as to H. P. The consent decree declared the hydrogenation plan unlawful and ordered dissolution of Hydro Patents Co. and Hydro Engineering & Chemical Co., except as dissolution might be prevented by refusal of other stockholders. The decree gave the licensees the right to take unrestricted licenses for the hydrogenation processes royalty-free during the war, and at reasonable royalty rates thereafter.

STANDARD AND SHELL IN C. R. A.

We have seen the importance of Shell in any solution by Standard of the C. R. A. negotiations. Shell foreign was half owner of the hydrogenation process outside the United States. Shell domestic did not have an equal position within the United States. Because from the beginning Standard promoted C. R. A. as a pool tying partly into hydrogenation, an understanding with Shell was indispensable. Settlement with Shell in the United States was also necessary to obtain its cooperation abroad. Thus American patents alone did not fix the terms under which American patents should be enjoyed under C. R. A. Foreign rights resting upon the contracts among the parties were a major influence upon the disposition of American rights.

Mr. Howard wrote Mr. H. Jacobson of Shell on October 19, 1938, a running account of the negotiations that had resulted in the London agreement of October 12, 1938, and appealed to Shell as follows:

"It appears that the natural thing for the Shell Company to do in connection with this development is to take up a position alongside the Standard Oil Company of New Jersey, both in the U. S. and outside the U. S. since in this way, and apparently only in this way, is it going to be possible to have the most orderly and efficient development of the catalytic cracking process in connection with the hydrogenation process" (exhibit 154).

Digitized by Google

Shell was, from the beginning, however, very much opposed to the view that the intermediate zone processes had anything to do with hydrogenation. Its opposition was natural since it did not hold a position equal to Standard's as to hydrogenation in the United States. Shell, resting its position squarely on the wording of the hydrogenation agreement and the chemistry of the processes, stated in a letter of February 3, 1939, by Mr. D. Pyzel of Shell to Mr. Howard the following:

"We still do not see any justification for the establishment of the intermediate zone. If I understand your reasoning right, the intermediate zone comprises processes carried out in the presence of purposely added hydrogen, but in which no hydrogen-addition can be definitely determined, because more free hydrogen leaves the reaction space than has been introduced to it. This would, in our opinion, place such processes unquestionably outside the hydrogenation field, as defined in the hydrogenation agreements. However, you maintain that, as it is *not impossible* that some hydrogenation-reaction *might* take place inside the reaction space, we have to give the owners of the hydrogenation patents the benefit of the doubt and oblige ourselves to pay them a royalty for using a perhaps not impossible but decidedly not determinable reaction, and to have defined by arbitration what degree of probability of such a reaction can be assumed, the royalty to be paid during the full hydrogenation royalty multiplied by a fraction representing that degree of probability" (exhibit 155).

This letter also went on to point out that, by the same reasoning, in view of the possibility of the release of hydrogen from hydrocarbons under catalytic treatment, and the possibility that some of this hydrogen might be added into some of the materials under treatment, therefore all catalytic processes might be argued to fall within hydrogenation, even though no free hydrogen were added.

The consequence of Shell's view was stated as follows:

"I hope that the foregoing will make it clear to you why we cannot feel the justification of establishing the idea of intermediate zone and of the effort to bring that zone into the hydrogenation field, whereby we would commit ourselvs to payment of royalties to Hydro Patents or Standard-I. G."

The letter included, however, an invitation as follows:

"I still hope that we may be able to work out some way of cooperating, instead of going separate ways which will probably lead to conflicts later."

By letter of February 7, 1939, Mr. Howard, in reply to Mr. Pyzel, suggested means of cooperation. Mr. Howard reiterated the necessity of agreeing about the intermediate zone as follows:

"(3) It would probably be easier for your company and our own to cooperate with one another and with the I. G. if we could arrive at a common agreement concerning the Intermediate Zone. In the absence of such an agreement between the three of us there will be some difficulty about technical cooperation in certain phases of the hydrogenation business.

"(4) As between Shell, Jersey, and I. G., considered as one group and Universal, it would tend to harmonious and helpful relations all around if there could be an agreement covering the Intermediate Zone" (exhibit 156).

The letter acknowledged that "* * * it would be helpful if some means could be found to equalize the interests of the Shell Union Oil Co., and the foreign Shell group, in the hydrogenation situation." Mr. Howard also reiterated that he would try to obtain from I. G. a modification of the hydrogenation contracts in case the H. P. members wish to include the intermediate zone within their license.

The difficulties with Shell explain why Universal ultimately became a party to C. R. A. Mr. Howard's letter of February 3, 1939, to Mr. E. J. Sadler, refers to a hostile move on the part of Shell and Texas as follows:

"The ostensible reason for their refusing to come into our arrangement was that the new combination would take business away from Universal Oil Products, in which all the parties had a financial interest, and that the right thing to do was for everyone to back Universal. We of course admitted the desirability of protecting Universal's interest, and made the best proposals we were able to make to cover this situation, but no agreement could be reached with Universal. To protect themselves, Texas, Shell, and Universal hurried through an agreement which was in substance an agreement to stand together against our group" (exhibit 157).

Digitized by Google

Although out of the alliances among the parties Universal ultimately arrived at a C. R. A. membership, in the capacity of grantor of its patent rights, and grantee of licensing rights, the view expressed in this letter as to Universal's position was as follows:

"As to the actual status of the Universal Oil Products Company catalytic process, we are advised that they had nothing whatever except laboratory work on catalytic cracking until three weeks before the Petroleum Institute meeting. At this time they changed over a pilot plant running on gas dehydrogenation to make it a catalytic cracker. They reported yields were obtained by cycling the charging stock five times.

"So far as we can learn, all that Consolidated, Texas, and Shell propose to install at the present time are pilot units. We do not believe Universal has, as yet, anything more than the vaguest idea of how a satisfactory commercial plant could be built."

The commercial motives combined in Standard's patent negotiations with Shell upon C. R. A. appear in the minutes of a conference held between Standard and Shell in the latter's St. Helena's Court offices in London on March 16, 1939, on the subject of their foreign-patent rights, as follows:

"It does not seem at all sensible to permit a continuation of the present situation under which Shell and Standard are sometimes found competing with one another in improving the efficiency and competitive power of third parties, nor is it constructive for Shell and Standard to make unnecessary alliances with partners in the field of patents and processes where the advancement of the interests of the partners is inconsistent with what would otherwise be dictated by the joint interest of Standard and Shell" (exhibit 158).

A letter of March 24, 1939, from Mr. Howard to Mr. J. B. A. Kessler, of Shell, emphasized further objectives to be gained by combined hydrogenation and C. R. A. settlements as follows:

"We could then undertake as a second stage of the matter to work out in Europe the merger between S. I. G. and I. H. P. patent rights, this being a matter in which nobody in America would then have any interest" (exhibit 159).

Standard continued to seek curtailment of competition between itself and Shell in licensing foreign patents as noted in the following in a letter of March 31, 1939, from Mr. Howard to Mr. Sadler.

"This will confirm our discussion of today concerning the desirability of trying to work out some solution of our most pressing oil patent problems, along the following lines:

"(1) Jersey and Shell to set up a joint agency in London for the coordination of the licensing of their own patent rights and, to the maximum extent possible, of all other patent rights which they separately or jointly control, or can arrange to take over on advantageous terms. The three basic objectives of this plan are to—

> "(a) prevent Shell and Jersey from injuring their respective commercial interests by competing with one another in dealing with third parties outside of the U. S. in the licensing of their own processes;
>
> "(b) permit the American technical developments in the oil industry to be coordinated and present a united front against the world outside of the U. S., not only for Jersey and Shell but for other American companies whose processes may be taken over for exploitation outside of the U. S. on partnership, commission, or other bases by the London coordinating agency;
>
> "(c) provide a definite organization in which all patent responsibilities, information, and negotiation will be centered for the Jersey and Shell groups,
>
> * * * * * * *

"(2) In order to make effective the plan above outlined it becomes necessary for Jersey and Shell to settle their present patent differences inside the U. S. Both parties have commitments to others which make this a difficult task" (exhibit 160).

Mr. Howard then elaborated a plan in which the outline of the C. R. A. draft of August 15, 1939, begins to appear. He accompanied it with this observation:

"Is a necessary corollary to the above arrangements, Jersey and Shell probably would have to exchange licenses with one another for the whole world."

Digitized by Google

The following report to Standard's board was made on June 15, 1939, on this subject:

"*Hydrocarbon synthesis agreements and catalytic cracking agreement.*—With respect to the over-all negotiations revolving about the hydrocarbon synthesis agreements, Mr. Howard advised that a major complication was the fact that the domestic U. S. Shell interests, which are not yet licensed under hydrogenation patents, fear that under the proposed general statement they might have to pay large royalties to Jersey for the new intermediate zone processes which are at present in the first stage of development and in the perfecting of which Shell itself presumably would have a substantial part. This complication stands in the way of Jersey and Shell, as a necessary corollary to all the other arrangements, effecting a program under which each could mutually exchange with the other licenses under their respective patents in the petroleum field for the whole world.

"As a solution of the difficulty Mr. Howard and Mr. Pyzel have discussed the sale of a paid-up license to the Shell Union Oil Corporation by Standard-I. G. under all of the hydrogenation processes (including the hydrogenation share of the Intermediate Zone Process). The basis of the sale discussed was $500,000 to $600,000 in Universal 'A' Notes. As an isolated transaction this price would be low, but as a means of effecting the over-all settlement it would seem to be a good trade. Another new factor which has been indicated since the last summary of the situation given the Committee by Mr. Howard is that the interested parties now feel it is desirable to provide for the actual negotiation of license contracts for the whole Western Hemisphere in New York rather than in Europe" (exhibit 161).

I quote in full the following succinct statement reflecting the ultimate arrangement proposed between Standard and Shell as outlined in a letter of August 12, 1940, by Mr. Howard to Mr. D. Pyzel, of Shell:

"I wish to confirm our recent discussion of certain arrangements to be entered into between Shell and ourselves as follows:

"1. There will be an equalization of the Shell group and Jersey group holdings of Universal 'A' notes, this equalization to be as of August 15, 1939. As a result of this equalization Shell will in essence receive a paid-up license as regards

"(a) Jersey's share in any amounts payable by Shell for Shell U. S. A. operations of the Hydrogenation Process;

"(b) Jersey's share in amounts payable by Shell to C. R. A. Inc.'s 'general account' on account of Shell U. S. A. operations of Intermediate Zone Processes of Class I and Class II.

"2. There will be an echange of patent immunities between the Shell group and the Jersey group worldwide for the broad petroleum field. This exchange of immunities would not include the chemical field. It has not yet been decided whether the field of production patents should be included. The decision on this we are willing to leave to you.

"As a result of the combination of arrangements outlined in 1 and 2 above it appears obvious that Jersey will receive in essence a paid-up license as regards amounts payable to Shell by Jersey interests under the Polyhydro deal as a result of Jersey's operation of the 'low pressure process'" (exhibit 162).

Out of these intricate commercial, industrial and technological relationships was the pattern of the C. R. A. patent licensing pool woven together.

STANDARD AND I. G. IN C. R. A.

As early as July 20, 1938, Standard and I. G. sought to formulate a special arrangement between them for development of a catalytic cracking pool. A new benefit was to be given I. G. as stated therein in the following:

"I. G. is entitled under the Four Party Agreement to 20% of the royalty received by S.-I. G. I. G. is not obligated under the Four Party Agreement however to undertake any research work in any special field at all. The foundation of the agreement described in today's supplementary 'First Complete Draft of Catalytic Cracking Agreement' is that the I. G. obligates itself to undertake and maintain an active program of research in the defined field, this being the consideration for the basic royalty payments which all the parties agree to make to I. G." (exhibit 163).

We may notice at this point that I. G.'s additional share in royalties, resting on the foundation of proposed I. G. contribution to research, was carried all the way through the later C. R. A. arrangements, even under those negotiated

Digitized by Google

after the outbreak of war, although obviously no fruits of I. G. research would be forthcoming during the war and although the additional royalties would continue to come due during the war. It is no wonder that Texas objected about this in a "Memorandum to Mr. Frank A. Howard," dated August 21, 1941, containing the following:

"* * * it has been our understanding that the payment by the oil companies of a definition royalty of 5% cent for catalytic cracking was justified entirely on the ground of future research and developments to be made in Germany, and we have no assurance that any research along these lines is being carried on and data being accumulated, and certainly in any event no data and information can be available to us during the continuance of the war.

"On the other hand, all of the oil company parties have actively continued research and development along those lines and are accumulating and exchanging technical data and information of value.

"If the fact that the oil company parties have definitely refused to permit any information and data to be given to Germany is considered as an offset, then it would be of definite interest at the close of the war to ascertain whether Germany has carried on any research and development work which they would then be in position to exchange. Certainly, if Germany has done no work some adjustment would be necessary * * *.

The foregoing analysis leads to the suggestion that Standard Catalytic Company agree with the oil company parties that it will hold the 5% cent payable by the oil company parties for catalytic cracking in trust for the oil companies and will not turn it or any technical data or information over to Germany at the close of the war without the consent of the oil company parties" (exhibit 164).

The proposed research was to be financed by royalties. Meanwhile, as to the period before receipt of royalties, it was provided in the cited draft of July 20, 1938, as follows:

"Jersey *agrees to advance I. G.'s share* of the funds required for the conduct of interim research, and I. G. agrees to pay back such sums to Jersey out of first net royalties available for distribution." [Italics supplied.]

It was pointed out in an unsigned Standard memorandum of August 17, 1938, that Standard's advance to I. G. of I. G.'s contribution to research would not be repayable unless royalties were in fact received.

At the time of the London agreement of October 12, 1938, Standard and I. G. initialed their own side agreement, which extended the basic four-party agreement of November 9, 1929. By this document, dated as of October 13, 1938 (exhibit 121, supra), I. G. waived the right to have returned to it after 1947 its hydrocarbon field patents outside of hydrogenation acquired by I. G. after 1941.

The arrangement for concealment of payments to Standard under the guise of payments to be made to I. G. under the C. R. A. agreement is plainly shown by the following quotation from article IV of this side agreement between Standard and I. G., reading as follows:

"Under the general agreement, S. I. G. has agreed to credit to I. G. a certain specified part of S. I. G.'s revenues from licensing third parties under processes coming under the definition of catalytic refining, and further to credit to I. G. the whole of those payments which are made to S. I. G. by the oil company parties for their operations coming under said definition. Under the provisions of the Four Party Agreement, I. G. would be entitled to 20% of the amounts thus credited to the account of I. G."

The parties then, pursuant to this recital, made the arrangement for the additional compensation to I. G. for its contribution to research, to be made out of the payments which by the main agreements were ostensibly to be made entirely to I. G. This overriding additional compensation to I. G. was to be in the amount of two twenty-fifths of royalties from Standard's operations and six twenty-fifths of royalties from operations of others. A limit of $2,000,000 was placed on the additional compensation.

The following provisions are interesting sidelights on the nature of the undertaking as to research:

"I. G. and Jersey agree to act as a unit to the end that expenditures for the interim research outlined in the general agreement shall be held at the minimum consistent with proper conduct of the business. I. G. and Jersey will jointly endeavor to arrange that the maximum possible part of the necessary interim

Digitized by Google

research is done by the parties to the general agreement themselves for their own accounts. The proportion of I. G.'s contribution to the fund for the interim research shall be 20% of its nominal contribution as fixed vis-a-vis the other parties to the general agreement. This arrangement, however, does not affect in any way the moral obligation of I. G. to undertake its own research programme in Germany in this field."

Standard was in a position to facilitate this new contractual arrangement with I. G. by converting many of its commitments to subsidize I. G.'s research into obligations to deliver oil in Germany in payment, as we see in a letter of December 29, 1938, from D. A. P. G., Standard's Germany subsidiary to Mr. D. L. Harper (exhibit 165).

A letter from Mr. W. E. Currie to Mr. Morrell E. Clark of March 1, 1939, states very simply the arrangement under which I. G. appears to come into the C. R. A. agreements for the purpose of granting its own rights, although they had already been granted to S. I. G. This statement is as follows:

"I. G., through our so-called 'Four Party Agreement', has already given Standard-I. G. licensing rights but it was thought desirable to have this right appear direct here (exhibit 166).

A memorandum of Mr. Howard's, dated May 4, 1938, outlined the advantages Standard relied upon in its position in regard to I. G.'s patents, and explained the way in which Standard proposed to turn that relationship to advantage. For its value as an explanation of the purposes underlying the form in which the I. G. interest was stated in all the subsequent negotiations and drafts of agreement, I quote the following:

"Our third objective in the catalytic cracking development is to obtain some direct cash return from the outside world for the use by outsiders of our patent rights and technical developments and information. Our patent assets, for which we are entitled to a return ,are not only those which originate (or are acquired by) the Jersey interests, but also those in the same field originating with I. G., which latter patent rights come under the agreements of 1929. According to these agreements Jersey is entitled to a varying share from a minimum of about 37½% to a maximum of 80%, depending on the exact invention and its field of application. For practical purposes the revenue from the catalytic cracking patents of I. G. outside of Germany will we believe fall almost entirely under the 80% bracket. It therefore follows that whatever participation the I. G. have in the Kellogg/I. G./Anglo-Iranian combination can be sidered as 80% Jersey participation. We have also to consider that, unless some other arrangement is made with I. G., Jersey itself will be obligated to pay to I. G. on account of any I. G. invention in catalytic cracking which it uses, 20% of a fair royalty for such inventions.

"In view of all these circumstances, it would seem that our best course is probably not to propose any direct participation in the revenues collected by the Kellogg/I. G./Anglo-Iranian combination, as a condition for putting our own patent rights into that combination on the non-exclusive basis—which seems to be the only one consistent with the second objective—but to rely for our cash return on the following: (1) on our 80% participation in I. G.'s share; (2) on the release by I. G. of their claim for any royalties on account of our operations.

"As additional reason for preferring this course would be that it puts the Kellogg combination in better shape to insist upon similar treatment from other oil companies, for example Standard of Indiana, California, Texas, etc. If Jersey asked for a direct participation in exchange for putting its rights into this Kellogg combination the other oil companes would find it very difficult to accept any basis less favorable, and in the long run this would result in whittling down the I. G. share to such a point that we would lose more through that route than we would gain through our direct participation.

"Our present conclusion therefore is that we should advise Kellogg that we are willing to join the proposed combination on the basis of putting in our patent rights on a non-exclusive basis, subject to the condition that they should not be licensed except to those who license us; that we should take a free license from the Kellogg combination, including I. G. itself, in return; but should ask no cash participation" (exhibit 166).

A memorandum prepared for Standard's executive committee, dated October 28, 1938, in explanation of the London agreement on C. R. A. processes and the

Digitized by Google

prospects of inviting Shell and Texas into the pool, gives the following further account of the role of I. G. in Standard's negotiations:

"All parties realize that Jersey has an interest in S. I. G. and that the royalties paid by the member companies to S. I. G. will go in part to I. G. and in part to Jersey. Our arrangements with the I. G. in connection with these processes are so complicated and in some respects so confidential, however, that we have always refused to discuss with the other parties the exact basis on which I. G. and ourselves participate in the S. I. G. royalties. An example of this complication is the following: In the application of our basic contract with the I. G. to the catalytic cracking situation, it was determined to be equitable that the I. G. should receive, over and above their normal participations, a certain substantial additional participation lying between $1,000,000 and $2,000,000—the former being our offer, and the latter their request. Efforts have been made to settle this difference between the parties along various lines, and the line which now seems most probable is that the entire amount will be paid to the I. G. in oil, I. G. giving the D. A. P. G. an option to purchase this oil in Marks at a specified premium price. There is great opportunity for misunderstanding and injury to our interests from any discussion of the relations between ourselves and I. G. in connection with these S. I. G. contracts and it is hoped that everyone will adhere consistently to the policy of ignoring completely the Jersey position in S. I. G. and treating S. I. G. as a separate entity, the internal affairs of which will not be discussed—either inside of our own organization or with others. Specifically, in the present instance all the member oil companies are accepting our assurance that Jersey will pay the S. I. G. exactly the same royalties which all the other operating companies pay to the S. I. G. They know that, to the extent this arrangement is tied in to the original Jersey hydrogenation arrangement with I. G., both Jersey and I. G. finally divide between them in some way the royalties paid in to the I. G.; but we have expressly declined to inform the other member oil companies what this division is, or the exact extent to which the interests of I. G. and Jersey in this catalytic arrangement overlap their earlier arrangements in connection with hydrogenation" (exhibit 167).

Thus it is clearly reflected that though the industry knew Standard and I. G. each had some interest in S. I. G. royalties, the industry did not know that Standard through S. I. G. already controlled all I. G. patents throughout the petroleum field. The industry knew of a merger of interests in "the original Jersey *hydrogenation* arrangement with I. G."—but not in the whole oil-refining field.

At the time of the C. R. A. memorandum of August 15, 1939, a separate paper entitled "Memorandum Regarding Shell and Jersey Royalty Payments," was drawn to provide a separate agreement between Standard, Shell, and I. G. as to royalties payable to I. G. from C. R. A. operations by Standard and Shell under foreign patents (exhibit C. R. A. 48). I call attention to this paper, since, after the war began, an arrangement was drawn up whereunder Standard was required by I. G. to obtain Shell's assurance to resume these payments to I. G. after the termination of the war.

Outbreak of the war interrupted consummation of the C. R. A. memorandum of August 15, 1939. Standard thereupon endeavored to resuscitate C. R. A., as we note in the following cable of October 20, 1939, from Howard to Ringer:

"Ringer all parties including Indiana appear favorable to proposed reconstruction C. R. A. discussed in the Hague. Stop. We are now trying to overcome some objections raised by counsel for several parties" (exhibit 168).

A note of Mr. Howard's committee meeting remarks attached to a memorandum dated November 14, 1939, describes the attitude with which negotiations were carried forward as follows:

"Upon completion of that agreement, the war intervened because our grouping of interested parties included Americans, British, Dutch, Germans, and the war introduced quite a number of complications. How we are going to make these belligerent parties lie down in the same bed isn't quite clear as yet. We are now addressing ourselves to that phase of the problem and I hope we will find some solution. Technology has to carry on—war or no war—so we must find some solution to these last problems" (exhibit 169).

In September 1939 Standard acquired I. G.'s 20 percent interest in the stock of S. I. G. Standard continued, however, to refer to I. G. for its approval of all questions arising in the C. R. A. negotiations. Standard continued to act as a partner loyal to joint interests rather than as 100 percent owner of property transferred to it, in spite of the fact that Standard not only had, to begin with,

Digitized by Google

all of the I. G. patents under the four-party agreement, but now had also all of I. G.-S. I. G. stock. I. G. delivered to Standard, under date of September 5, 1939, a statement of its wishes in regard to further reconstruction of the C. R. A. memorandum of August 15, 1939. It states the following:

"Under present conditions it is of course impossible for us to enter into any agreement to which enemy subjects are parties. We recognize, however, that to a very large extent the patent rights originating with us and which are dealt with in said documents, are in fact the legal or equitable property of Standard-I. G. company. We are prepared to convey to Standard-I. G. Co. the remainder of such patent rights and all technical knowledge and information which we would have brought into the said proposed agreement, provided * * *" (exhibit 170).

I. G. attached the condition that it shoud not be required to furnish information if prohibited by the German Government, and that Standard-I. G. should not furnish to it information where this would be contrary to regulation by government authority controlling any party in question.

I. G. expressed to Standard in this document its view of future cooperation, as follows:

"We understand that in view of our interest it will be the policy of the S. O. Deve. Co. to consult us on important questions arising in the conduct of the enterprise and that when conditions permit S. O. Deve. Co. will propose to all parties that direct cooperation between all parties as contemplated in the memorandum of August 15, shall be established."

Under date of November 3, 1939, Mr. Howard delivered to the C. R. A. partners an announcement that Standard had acquired all the capital stock of S. I. G., and that S. I. G. would assume all the obligations to the parties which had been assumed or would have been assumed by Standard and I. G., and also that—

"Correspondingly, all considerations and obligations running to Standard-I. G. Company, Standard Oil Development Company, and I. G. Farbenindustrie, A. G., by any or all of the other parties to the memorandum of August 15 would run to, or acrue to the benefit of, Catalytic Patents, Incorporated" (exhibit 171).

The announcement also pointed out that failure to perform any obligation on account of the war should not be considered a breach or invalidation of the agreement, or constitute any failure of consideration. Thus it would follow that special royalties originally created on the basis of I. G. research would continue to be payable to C. R. A., Inc., although the research could bear no fruit during the war.

The British partners to C. R. A. were afforded an opportunity to complete the C. R. A. pool on the basis of Standard's representation that it was now entire owner of the company that would hold the pooled Standard and I. G. patents. Standard's acquisition of I. G.'s stock in S. I. G. had, however, made little change either in I. G.'s rights or in the relations between Standard and I. G. I. G. remained entitled to the same percentage of royalties to be paid upon patents that it had transferred to S. I. G., for its rights arose under its separate contracts with Standard and not by virtue of its stock ownership. By virtue of the original agreement of 1929 it was still entitled to stated amounts of royalties, and by virtue of its subsequent separate C. R. A. agreements with Standard it was entitled to additional overrides. The stock ownership, outside of its share in a nominal $11,000 per year income set apart by the contracts, had represented nothing but a minority voice in management of the company. In spite of the surrender of stock ownership, I. G. continued to exercise a voice in arriving at the terms upon which the former I. G. patents should be pooled in C. R. A.

I file herewith a memorandum by Mr. F. R. Loofbourow, dated January 30, 1940, and listing the continuing interest of I. G. in C. R. A. royalties, including both the original 20 percent and the C. R. A. override payable to I. G.

At the same time that Standard represented to the C. R. A. partners that it had acquired 100 percent of the stock of S. I. G., Standard worked out an arrangembent to place the patents acquired from I. G. in trust in order to prevent them being held by a corporation 100 percent of whose stock had come into Standard's hands and, consequently, to prevent the flow of patent rights to third parties under existing contracts giving them rights to patents held by 100-percent Standard subsidiaries. A similar arrangement was made to place the Jasco stock transferred by I. G. in trust. Throughout Standard's conduct bearing on its relation with I. G., it appears to have played what was nothing more than a shell game: now you see it, now you don't. Much later than this

Digitized by Google

period, Standard was still, at the 1941 hydro-patents meeting, representing to stockholders that because of foreign interests there was great difficulty in lowering the hydrogenation royalties or otherwise unfreezing the royalty structure. To C. R. A. partners, however, the representation was made that Standard was the sole owner of I. G.'s interests. To parties entitled by existing contract to licenses under Standard's patents, the ownership was still a different one, being that of a trust arrangement for stalling outright Standard ownership. I quote a letter from Mr. Howard to "Dear Fritz," evidently Fritz Ringer of I. G., dated January 12, 1940, giving the following account of the trust arrangement:

"I am enclosing copies of two trust agreements, one dealing with Standard-I. G. patents, the assignments of which were given to me at The Hague, and the other with the Jasco shares. In the rearrangements effected during August and September Jersey would have become owner of 100% of the capital stock of S. I. G. and S. I. G. would have acquired title to all the patent rights originating with I. G. in the field of the Four Party contract. Similarly, Jasco would have become a 100% Jersey corporation and would have taken title to all the patent rights.

"This situation troubled me a great deal because I was afraid that, through the unforeseen operation of past contracts or through inadvertence in drawing future contracts, the patent rights of S. I. G. and of Jasco might become intermingled with those of Jersey, and pass to others as a part of general agreements binding Jersey and all of its 100% subsidiaries. It was also very much in my mind that although Jersey was the bona fide owner of 100% of the capital stock of Jasco and of Standard-I. G. and these corporations were, in fact, entitled to the patent rights to be assigned to them, there were in both cases complicated relationships between all the parties, created by the original contracts, and these relationships would always have to be borne in mind in anything that was done with the patents of these two corporations.

"It therefore seemed wise to set up some mechanism by which special consideration would always have to be given before any action could be taken which would affect the patent rights of S. I. G. or Jasco. This has been accomplished by placing the patent rights of S. I. G. in trust, subject to the terms of the Four Party Agreement, and by placing 50% of the voting stock of Jasco in trust, subject to the terms of the memorandum which we drew at The Hague. I believe these arrangements will fully protect the interests and rights of all the parties. I must say that I was considerably troubled in my own mind until I worked out this mechanism, because I felt that I was carrying too much personal responsibility" (exhibit 172).

I file, as exhibit 173, documents illustrating the various assignments of patents in the S. I. G. and Jasco fields made by I. G. after outbreak of war in Europe, showing the various forms in which they were assigned and reassigned to conform to this true device.

I call attention to the fact that by letters of March 29, 1940, April 19, 1940, and March 17, 1941 (exhibit 173, supra), between Standard and I. G., it was arranged that during the war I. G. should, on its developments (presumably in fields assigned to Standard), file applications in France and England in Standard's name.

Under the terms by which I. G. had authorized Standard to continue the C. R. A. negotiations, I. G. was protected against further disclosure of information, but I. G. continued to receive information from Standard. In the course of the further negotiations with the C. R. A. partners, the decision was arrived at by March 18, 1940, to discontinue further disclosure to I. G. At the time this was decided, and instructions sent out on March 18, 1940, we notice that Dr. Beller of I. G. was at that very moment in the Standard laboratories and had to be informed of this decision (exhibit 174).

When Mr. Howard sailed on April 13, 1940, to confer with the I. G. representative (exhibit 175), he took with him the C. R. A. memorandum executed as of April 12, 1940, and also a redraft of a "C. R. A. agreement between Jersey and I. G.," dated April 11, 1940 (exhibit 176). There were numerous supplementary papers initialed by the parties at the time of the draft of April 12, 1940, covering various particular angles of the negotiation. Among these was a paper initialed by the parties, dated April 13, 1940, reciting the understanding that none of the technical information to be exchanged should be passed on to Germany or any of its allies, or to any companies or nations of Germany or its allies until after the termination of the war (exhibit 177). (See also exhibit 178.)

Digitized by Google

As an instance of Standard's continued deference to I. G. for its decisions in C. R. A. matters, we note that by letter of April 13, 1940, Mr. William B. Plummer, of the Standard Oil Co. of Indiana, raised a particular detailed objection to the draft of April 10, 1940, and explained that Mr. Howard had assured him "that he would discuss the matter with Dr. Ringer and at least find out what Dr. Ringer's previous understanding had been relative to our position and rights" (exhibit 179). On this point, a Standard cable of April 22, 1940, requested Mr. Howard to take this point up with Dr. Ringer as follows:

"Since Indiana pays on definition it is entitled to some assurance that other Universal immunity holders will not be granted a three-eighths reduction from normal third-party rate by reason of their Universal immunities alone. Suggest you discuss with Ringer and cable us best that can be done for protection of oil company parties" (exhibit 180).

The following expressions used by Mr. Howard in a telephone conversation from Basle, Switzerland, to New York on May 1, 1940, emphasized the part that I. G. continued to play:

"Dr. Ringer stated that he was unable to consider the 20% leveled-off percentage from U. O. P. licensing. Since as a matter of principle it was essential that the I. G., for intermediate zone, receive a higher percentage even though in order to do so they had to sacrifice as regards the percentage to be received for catalytic refining * * * Mr. Howard stressed that this was absolute rock bottom and he was convinced that it would be impossible to secure Dr. Ringer's agreement on any lower basis * * *. Dr. Ringer's insistence * * * this was absolute rock bottom * * *. Dr. Ringer insists that no license be granted under a patent originating with the I. G. unless the I. G. receive back from the grantee the free right for the I. G. to operate in Germany under the grantee's patent rights * * *. Dr. Ringer would accept a provision whereby the oil company parties should pay five-eighths of the lowest rate applied to any class of licensee (as a class) * * *. He felt it essential, however, that it be possible to make special trades with individual companies in the light of some particular set of circumstances without affecting the royalty rates payable by the oil company parties" (exhibit 181).

On May 4, 1940, Mr. Howard cabled Mr. Russell from Basle, Switzerland, on the suggestion of the above royalty arrangement as follows: "Ringer adamant" (exhibit 182).

The result of the conferences were summarized in this cable as follows:

"Ringer has given me letter outlining conditions acceptance whole deal and containing several small troublesome points. On receipt telegram from him, confirming letter, we can regard matter finished here, subject only acceptance all parties New York of number relatively minor points in letter. Air mailing copy letter" (exhibit 183).

I. G. wrote to Standard, under date May 11, 1940, under the signature of two of its officers, setting forth a final statement of the terms upon which Standard should carry on with C. R. A. to complete arrangements to pool both the Standard and the I. G. patents. The letter contained a formal release of all obligation to exchange technical information with I. G. during the war. The letter set forth that—

"Standard will, before final execution of the contracts, obtain assurance from Shell that on the termination of the present war Shell will stand ready to join with Standard to proceed in accordance with a certain memorandum of August 15, 1939, entitled MEMORANDUM REGARDING SHELL AND JERSEY ROYALTY PAYMENTS, * * *" (exhibit 125, supra).

The right of Standard to proceed with C. R. A. was stated as follows:

"Standard I. G. or C. R. A. may grant licenses or immunities under the patent rights originating with I. G. with or without those originating with Standard and may fix the price and terms of such license, subject only to the agreement of November 9, 1929, and shall pay over to I. G. 20% of the proceeds."

Standard has complied with the terms of this letter agreement. We may note that I. G. specified in this agreement that C. R. A. should grant no catalytic refining license at a rate less than a minimum of 2½ cents per barrel. By letter of April 1, 1941, Mr. Howard reported to the executive committee that Indiana had developed an isoforming process which would not stand a royalty higher than 2 cents per barrel. He reported, however, as follows:

"Under our proposed C. R. A. agreements we have no right to license any process for less than 2½¢ without the consent of everybody concerned. In the proposed cable we are suggesting that I. G. give its consent to licensing this process at 2¢ per bbl." (exhibit 184).

Digitized by Google

The executive committee approved dispatch of the cable and I. G.'s consent was obtained (exhibit 185).

Along with the letter agreement of May 11, 1940, thus drawn to express the terms upon which Standard should carry on with C. R. A., Dr. Ringer forwarded a detailed 10-page outline of comments and suggested revision of the C. R. A. memorandum of April 13 (exhibit 186).

In a letter of May 14, 1940, from Mr. Loofbourow to Mr. Russell there appears an itemization of some of the "more important and troublesome requests made." One of these contained an essential bearing upon whether or not C. R. A. should be an exclusive or a nonexclusive arrangement. It appears that I. G. had insisted "that any party granting a license or immunity under its own patents alone for cash or its equivalent will withdraw from the exchange of technical data" (exhibit 187).

Mr. Howard cabled I. G. on this point on July 3, 1940, as follows:

"Counsel finally rejected your proviso in point four that party granting license under own rights for cash will withdraw from exchange experience" (exhibit 188).

These antitrust considerations entertained in opposition to I. G.'s demands were, however, given little practical effect under the draft of July 9, 1940. It did reserve for each party the right to grant licenses under its own patents and to retain royalties received. However, the parties were expressly forbidden the right to divulge information within the C. R. A. field to outsiders, except under narrow conditions and severe penalties. It was provided that oil company members should not give such information to outsiders unless compelled to do so for protection of their main operating interest. The evident meaning of this provision is that the parties should have the right in case they were forced to make such an arrangement with outsiders because of a patent conflict. The penalty was provided in case such member did make such an arrangement for exchange of information with an outsider that such member must withdraw from the group exchange of experience, but must nevertheless continue to furnish the group such party's own experience in the field. Therefore, in practice, all that the parties actually retained was a bare licensing right under their own patents, but without free opportunity to accompany the license with information for operation of the licensed process.

The above cable of July 3, 1940, contained the following appeal by Standard to I. G. to allow Standard to go ahead and make decisions itself in negotiating for the licensing of C. R. A. processes. I quote:

"On the whole we think agreement is still practically workable and satisfactory but we are increasingly concerned over the basic legal situation which causes counsel to insist upon deletion these various detailed provisions which we think are normal and desirable from a business standpoint STOP We therefore recommend you wave points Firstly and Secondly so far as their detailed effect is concerned and leave with us decision which must be taken next week to initial agreements at once and start technical cooperation or on general grounds more than with particular reference to above detailed points to further defer conclusion of matter" (exhibit 188).

We note the following memorandum by Mr. Howard dated July 10, 1940:

"I talked to Dr. Ringer in Berlin this morning and secured his full approval to the C. R. A. agreements in the form in which they were initialed by all parties and left with me yesterday. The agreements will therefore be released today and the cooperation of parties under the agreements will begin at once" (exhibit 189).

Whether Standard's wish to complete its acquisition of control after 1948 over patents I. G. should acquire after 1941 is the entire explanation of these continued efforts of Standard to obtain I. G.'s approval of final C. R. A. terms, and what urgency there existed during wartime to assure continued future control of I. G.'s future patents are obscure questions. It is at least clear, however, that during 1940 Standard was seeking to extend the 1929 four party agreement.

FLOW OF C. R. A. ROYALTIES FROM ENGLAND TO GERMANY DURING WAR

The technlogical power of the Standard-I. G. agreement and the forms in which it was reposed were capable of bringing about the flow of royalties from England to Germany during the war.

Mr. Russell of Standard, reported to Mr. Howard in a letter of August 20, 1940. as follows:

"Mr. Asbury, Mr. Loofbourow and I talked C. R. A. matters with Mr, Jackson and Mr. Smith of Anglo-Iranian, this morning and I believe satisfied them on all

Digitized by Google

points save one. We gathered the impression that Anglo Iranian would require assurance that any royalty payments made by them during the period of the war would not inure to the benefit of any German company or national" (exhibit 189–A).

A cable in Standard's files from Anglo-Iranian's London office to its New York office expressed this point emphatically as follows:

"You must insist that definite assurance is given that I. G. or S. I. G. are not included in any way in proposed agreement" (exhibit 189–B).

Mr. Howard write to Mr. Jackson, of Angla-Iranian, on August 22, 1940, the following account of Standard's acquisition of I. G.'s interest in S. I. G.:

"Mr. Russell has told me of his conversation with you concerning the C. R. A. payments. Under the proposed contract structure these payments will be made to a new company, identified as The Special Company, to be set up and owned 50% by Jersey and 50% by Shell. The royalties received by the new company from Anglo-Iranian as well as other licensees will be paid, according to the origin and nature of the royalty and pursuant to a rather complicated schedule, to one or more American corporations and to the Bataafsche Petroleum Maatschappij, of Curacao. The American corporations in question are in turn owned 100% by American interests with the exception of some holdings by Bataafsche. No payments are to be made by The Special Company to any German corporation or to any corporation in which any German national or corporation is a shareholder.

"We hope that these assurances will be satisfactory to you. The payment of hydrogenation royalties by I. C. I. to International Hydrogenation Patents Company gave rise to the same question, and these same assurances resulted in a permit, by the proper authorities, authorizing the payments.

"We realize that these assurances leave open the possibility that German interests may still receive indirectly through contracts or indirect shareholdings, certain benefits or moneys as a result of payments made to American owned American corporations. On the informal advice of our own Department of State to whom me submitted the question in connection with the I. C. I. payment, we cannot as a matter of principle undertake to give you any assurance so sweeping as to negative these possibilities. It seems to be well recognized that there are practical limits on the extent to which it is proper to attempt to follow the flow of payments or benefits through business channels" (exhibit 189–C).

In response to these representations, Mr. Jackson replied to Mr. Howard on August 23, 1940, as follows:

"I am much obliged for your letter of yesterday, and for your very clear and frank explanation of the position regarding royalties. As far as I am concerned, this information clears up the points on which I was doubtful, and I shall be glad to arrange for our technical data to be exchanged and for Mr. Smith to attend the forthcoming meetings" (exhibit 189–D).

Every statement Mr. Howard made in his letter is true. He has even gone beyond literal statements of fact and raised the possibility of a German interest existing by contract with American corporations. Yet all of the statements as to stock ownership and as to the immediate recipients of the payments are quite beside the point. Since 1929 the substantial interests in S.–I. G., that is, Standard Catalytic Co., have been governed not by stock ownership but by overriding contract. The ultimate recipients of the payments, Standard and I. G., themselves arranged by contract the corporate intermediaries to receive payments. The jointly held corporation has been a mere form for carrying out the partnership. After all the formal rearrangements made by Standard and I. G. after outbreak of the war in Europe, the fact remained that I. G.'s interest in royalties was just about exactly what it was before the formal changes.

On a fair judgment of this transaction it is doubtless true that Mr. Howard did not have an intent to deceive. It is suggested by the record that Anglo-Iranian was anxious to be given a formula upon which it could proceed. Mr. Howard's letter certainly had the character of a formula, and apparently it was adequate.

Anglo-Iranian was under the practical necessity to come to the United States to enjoy the exchange of patent rights and technical information set up by C. R. A. The United States was neutral, its corporations had the right to make contracts with German corporations, and they had the right to agree to pay to German corporations royalties in amounts corresponding to royalties received from English companies. They had a right to refrain from disclosing these obligations to English companies. Nevertheless, the fact remains that the British Government sought to prevent payment by its nationals to German nationals

Digitized by Google

during the war, and yet, in actual result, that is exactly what was to take place under the C. R. A. arrangement.

GERMAN GOVERNMENT CONTROL OF THE TERMS OF AMERICAN PATENT POOLS

It is, of course, notorious that for the last several years German business enterprise has been German Government enterprise. But it certainly should be expressedly pointed out that this agreement upon C. R. A. processes, which was international in character and which lay down the lines all over the world for enjoyment and licensing of modern catalytic processes, fixing economic advantage and prerogative therein, was promoted from the beginning under the control and direction of the German Government. We see the hand of the German Government in the following cable dealing with approval of the original London agreement of October 12 and 13, 1938, sent by Ringer to Howard on November 10 of that year. I quote:

"I. G. has approved in principle of catalytic refining deal provided Government approval will be obtained" (exhibit 190).

The like control as to the terms of the hydrocarbon synthesis patent pool has already been observed.

It is, of course, not to be argued that whatever Germany does the United States should do. Obviously, if German authorities imprison citizens without cause, that is no recommendation for similar action here, but the contrary. But in agreements of this character, the subject matter is of enormous public and international importance. It is clearly an unwholesome situation that a foreign and, since 1933, a notoriously dangerous government should have a guiding hand in the creation of such international and domestic arrangements, while the Government of this country did not even know the terms of the arrangements under negotiation—and, indeed, was not informed of the terms of the underlying basic relations that had existed since 1929 between the two principals, who were the largest industrial corporations in Germany and the United States, respectively.

It is intolerable that not alone the international arrangements for such a subject matter as C. R. A. but even operations within our own country have been forced to wait the approval of the Hitler government. In 1939 the Standard Oil Co. of California had at length worked out a tentatively satisfactory arrangement for a C. R. A. license. It was signed and submitted to I. G. A letter of May 1, 1939, by Mr. Howard to California states the following:

"Dr. Ringer, of the I. G., has been with us for some days now, and advises that the California agreement has been accepted * * * by his Board, and informally approved by the Government. He is not able to release the contract, however, until the formal, written approval of his Government is received" (exhibit 191, and see exhibit 192).

One piece of the machinery by which the German Government obtains minute control over the patent arrangements of its own companies is that a German company cannot obtain Government approval for any patent agreement with others under which it must pay foreign exchange in royalties unless it can show an "absolute necessity for the payment of royalties." We see this condition stated in a letter by I. G.'s Bütefisch to Mr. Howard dated May 10, 1938, in which Mr. Bütefisch points out that I. G. would not be permitted to pay royalties to Universal or Gasoline Products for licenses under their German cracking patents, since I. G. already had patent rights for equivalent processes (exhibit 193). Unquestionably German governmenttal restrictions frequently, if not usually, operated to confer bargaining advantages on the German companies in their dealing with foreign companies. In contrast, we observe that under the C. R. A. memoranda the parties, even the members, were required to pay royalties to I. G. by definition, that is, for operations of the character defined in the agreements, even if, for whatever reason, they did not in fact need a license under any I. G. patents.

CONCLUSIONS RE C. R. A.

In C. R. A. Standard sought to create by force of agreements with the leading oil companies a self-perpetuating patent position covering generally the entire field of modern catalytic refining for production of gasoline and other petroleum products, affording a free right to the member companies to use the present and future patents, discoveries, and technical information of others, and giving Standard a fixed royalty advantage in the field thus defined.

Digitized by Google

The group was to be tied together by commitments to exchange technical information exclusively within the group and among its licensees. The pool was broader than any patents of any one party and even than patents of all the parties. The original parties were taken in as members of the pool regardless that they had no considerable patents in the field and simply because of, and with participating shares based upon, their size, their research and technical potentialities, and their positions under existing agreements.

Standard was able to exert great pressure in forming the pool and in gaining its predominant position by its existing contract giving it control of all of I. G.'s oil refining processes. If Standard's real purpose in C. R. A. was only to promote common research for the discovery of new processes, and to provide by the agreement merely a means for licensing the new processes to the public while protecting the interests of the parties in their disclosures and in the resulting discoveries, Standard could have dropped I. G. from the negotiations when the outbreak of war prevented I. G.'s participation in or contribution to the C. R. A. joint research. Negotiations with I. G. could have been postponed until a time when I. G. could contribute. But Standard sought persistently to tie up the I. G. patents and research of the future. For this purpose Standard sought by every means to effect a final agreement with I. G. and referred every stage of the C. R. A. negotiations to I. G. for its consent. This is one view of the nature of Standard's negotiations. The other is that Standard already regarded itself as fully committed to act at all times as a full partner of I. G. in the C. R. A. field, committed either by its express undertakings with I. G. in that field since 1938, or by its general partnership. The practical result of either view is the same—that for years Standard and I. G. lived together in joint exploitation of this field. Standard committed itself to the C. R. A. partners to bring in the future I. G. patents. If it did not live up to this commitment, it would lose its predominant position for free use of the patents of others and the right to royalties from others. The common research would go on equally as well, but the patent advantage to be given Standard by the agreement would be lost. Standard's promotion of C. R. A. as a means of securing and crystallizing fixed patent advantage to it in this field was thus demonstrated.

Standard also utilized for these purposes the hydrogenation contracts to which all the major oil companies in this country were parties and which served as a potential dragnet to take control of many aspects of the new processes if they should not be surrendered into the new C. R. A. pool. Standard was also able to exert great pressure upon Shell because of its affiliation with it in hydrogenation abroad. After the joinder of Shell in the C. R. A. pool the power of the group was again greatly enhanced. The record is clear that Standard in fact exerted pressure from all these sources to the utmost.

As in the other pools promoted by Standard, the old hydrocarbon field definition formulated in Standard's basic agreement with I. G. was brought into C. R. A. This joint endeavor by the oil industry was thus to be kept out of the chemical industry. Standard faithfully performed its commitments to I. G. under which it enjoyed the control of I. G.'s oil processes.

Whereas a successful independent development, the Houdry process, was the immediate occasion for promotion of C. R. A., a successful independent development was thus a stimulus to large company combination, the terms of which would thereafter present an obstacle to independent development.

It is beside the point if this country was better off with C. R. A. than without it, when the real question is whether C. R. A. was not far worse than it need have been had it not been shaped to serve an overacquisitive and oppressive policy. Under the mantle of the C. R. A. understandings there was indeed helpful exchange of technical experience and information, and combined patents and methods were to be made available to the industry. Of course the work of many can exceed that of one, and that of many together exceeds that of many apart. Of course one license under many patents may in many cases be necessary for satisfactory operation. But it is basically unfair when one company, first by its size, then by its own size augmented by complete joinder with its supposed peer in modern research; namely, I. G. Farbenindustrie, and finally by the power of agreements into which it can attract or beguile the leaders of the industry, is able to compel cooperation on its terms which fix for it a preferred position not only under methods of manufacture now known but also under those of the future and unknown. It is certainly not good for the country that the terms so offered should minimize incentive for development, as do the

Digitized by Google

C. R. A. terms under which the group demanded free right to all catalytic refining developments or innovations, however substantial, by licensees, and under which only the group should receive royalties in the field, regardless of developments.

THE CONSENT DECREE

In these circumstances, the remedy as to C. R. A. provided by the consent decree entered in the Standard Oil case was that C. R. A. was abolished. The parties are of course perfectly free to license their own patents and to make a joinder licensing arrangement on a different principle, avoiding the invidiously exclusive features of C. R. A. and the freezing of advantage and disadvantage over future developments. Of course, the decree permits any arrangement sanctioned by a war agency of the United States Government.

The root of C. R. A. was cut by a declaration of invalidity of the hydrogenation plan, by severance of Standard's relations with I. G., and by making available free of use restrictions or other limitations, royalty free to the public, the patents pooled between Standard and I. G. Hydroforming is subjected to the compulsory licensing provisions by name, regardless of any consideration as to its status or as to the extent to which it was pooled with I. G. Thus in this field Standard's own patents as well as those originating with I. G. are thrown open under the compulsory licensing provisions. In addition, the decree contains the general provision that all patents held by Standard, its subsidiaries or representatives, as to which either Standard or I. G. assumed any commitment to each other, are made subject to compulsory licensing provisions.

EXHIBIT 140

METHANOL OR METHYL ALCOHOL (STANDARD OIL OF NEW JERSEY AND I. G. FARBEN)

Statement by John R. Jacobs, Jr.

BACKGROUND

This committee is familiar with the basic arrangements between Standard Oil Co. of New Jersey and I. G. Farbenindustrie, entered into on November 9, 1929. Standard was in the alcohol business prior to the execution of these agreements, and its alcohol business should not have been affected by the agreements with I. G. This had been made clear at a meeting between I. G. and Standard officials on March 21, 1929:

"Mr. HOWARD pointed out that we were already interested in chemical and pharmaceutical specialities, such as NUJOL and FLIT, on the one hand, and solvents, on the other hand, and that we have carried out extensive research and development work in the solvent field.

"Dr. BOSCH *stated that he had reference not to our present activities but to future developments.* He explained their agreement with the Winthrop Chemical Co., which is to sell I. G. products. With regard to solvents, he stated that I. G. were very much interested and would like to come together with us. He stated that he desired to prevent our competition in colors, pharmaceuticals, etc., with particular reference to new products, and explained in confidence certain developments which they had already undertaken. In the matter of these new developments, he wished the management and dominant interest to be in the hands of the I. G. He stated that it was the policy of the I. G. not to go into old fields already occupied but to create new industries and new fields; that the I. G. did not wish to go into competition in the U. S. with the U. S. chemical industry" (exhibit 1).

However, in spite of the fact that I. G. stated it was not interested in Standard's "present activities," Standard's relationship with I. G. did effect the production of methanol in the United States and also adversely affected the Standard Alcohol Co., a corporation in which Standard held a majority interest.

On September 26, 1919, Standard entered into a contract with the Melco Chemical Co., whereby Standard took over a number of alcohol patents. A small experimental plant was constructed in 1919–20 at the Bayway refinery, and with the development of the business, additions were made to the plant from time to time until 1930. Unfortunately, from a business standpoint, the

Digitized by Google

largest additions to the plant were made in 1929–30, at a time when costs were at their peak. Prior to 1930 the operations in some years were profitable and in other years unprofitable, but the net loss for the entire period beginning 1919 and ending 1929, after paying royalties amounting to some $326,000, was about $57,000. From approximately 1930 to 1934, inclusive, during which time the Standard Alcohol Co. was formed, the operations showed substantial losses. This was primarily due to the fact that the volume of business was not sufficient to absorb the financial burden of the greatly enlarged plant (exhibit 2).

The Standard Alcohol Co. came into existence and began operations on October 1, 1932, as the result of patent litigation between Standard and the Petroleum Chemical Corporation, which corporation was controlled by the National Distillers Products Corporation. Standard Alcohol Co. is now owned 65 percent by Standard and 35 percent by National Distillers Products Corporation.

The Standard Alcohol Co. was under a handicap from the outset because, as previously mentioned, "for policy reasons" (as stated by Standard) it was obligated to purchase the alcohol inventory of the Standard Oil Co. of New Jersey on October 1, 1932, at a cost of $917,178.51, which cost was $257,191.61 higher than the cost of replacement at that time. This high inventory cost obviously had an adverse effect on the future earnings of the company.

The principal products manufactured and sold by the Standard Alcohol Co. are industrial isopropyl alcohols (when blended with methanol or wood alcohol, is used as an antifreeze), Deenax (a denatured grade of isopropyl alcohol) higher alcohols and acetates (used in the lacquer and furniture industries), and various other miscellaneous products.

METHANOL AS A MOTOR FUEL

It will be recalled that in the four-party agreement between Standard and I. G. of November 9, 1929, the hydrocarbon field was defined as the treatment of carbonaceous liquids, solids, and gases to produce marketable major products which were commonly produced in the oil and natural gas industries. In the hydro patents and international hydro patents agreements, by which the processes pooled in the S. I. G. Co. were exploited, both in the United States and the world outside of Germany, the term "hydrocarbon field" was limited to the treatment of only liquids and solids. Therefore, the treatment of gases was transferred to the S. I. G. Co. by Standard and I. G., but this right was not transferred to companies who obtained their rights from S. I. G. As stated by I. G. in a letter to Mr. Howard of February 12, 1932:

"The production of methanol from carbon oxides and hydrogen comes partly under the four party agreement and more particularly under hydrogenation and still more particularly under the hydrogenation of gaseous products which is not included in the Hydro Patents and I. H. P. contracts, but has remained in the hands of S. I. G." (exhibit 3).

A memorandum prepared by I. G., dated May 24, 1932, states:

"Up to the present time methanol is exclusively used in the chemical field, but its possible use as a motor fuel is now being widely discussed. Several requests have reached the I. G. asking for a license on the rights and experiences of I. G. for producing methanol. It is obvious that these requests have been prompted by the interest that methanol is now raising as a possible motor fuel.

"We have talked the situation over with Mr. Howard and came to the conclusion that this is a situation where I. G. and the Oil Companies are dependent upon each other; it would seem practically impossible that the licensee manufactures 2 kinds of methanol, one under our patents or with our technical experiences and the other without it. Therefore I. G. and I. H. P. should proceed in accordance with each other and should first agree on a general line of policy to be pursued; such general line would seem to be not to push the licensing of the process but not to refrain from granting licenses in cases where people would otherwise go ahead themselves; * * *" (exhibit 4).

Further, in regard to the use of methanol as a motor fuel, von Knieriem, of I. G., said in a cable to Mr. Howard, dated April 25, 1932:

"For Howard. With regard to general licensing policy Methanol we agreed with you in Ludwigshafen that there should be no pushing but that it would be useless to deny cooperation in cases where people would otherwise go ahead themselves * * *" (exhibit 5).

From the above it is obvious that Standard and I. G. have not actively promoted the use of methanol as a motor fuel.

Digitized by Google

METHANOL IN THE CHEMICAL FIELD

The methanol patents of both Standard and I. G., when the product produced was to be used in the chemical field, e. g., as an antifreeze, were not included within the division of fields agreement or Jasco, the corporation formed by Standard and I. G. to exploit chemical developments, because it was not "any new chemical development," as defined by the parties. Therefore, the use of methanol in the chemical field was left for future negotiations by Standard and I. G. when the basic agreements were executed in 1929.

Before taking up the negotiations between Standard and I. G. in regard to the use of methanol in the chemical field, it is considered advisable to quote a letter of June 4, 1940, found in the Chemnyco files, in reference to the significance of methanol as an antifreeze product for automobiles:

"Of the 30 million cars at present used in the United States, about 25 million use antifreeze products. Each car needs an average of two gallons per year. The entire market for antifreeze products here amounts to 50 to 55 million gallons a year, of which 9 to 10 million consist of Aethylenglycol—which no longer is an exclusive product of the Carbide and Carbon Chemical Corporation (Preston)—the remaining amount is divided among glycerine, denatured and pure ethyl alcohol and Methanol (synthetic and wood-coal Methanol) and Methanol mixtures. Methanol and Methanol mixtures cover more than half of the entire demand.

"Aethylenglycol has been sold here for $2.65 per gallon during the past winter. Aethyl alcohol, Methanol, and Methanol mixtures have been sold at $1.00 a gallon. From an economic point of view, Methanol is mostly preferred; if it is compared with Aethyl alcohol it gives 20 percent more protection to the car provided the same volume is used. The objection that Methanol is more easily transformed into steam is correct, but it is without any practical significance since under normal conditions the steaming process is so small that it is not necessary to add more Methanol during the winter, especially since Methanol gives more protection from the very beginning."

* * * * * * *

"In regard to future developments, the prevailing opinion is that the Methanol antifreeze products will be preferred to the more expensive Aethylenglycol products, since an increasing number of people are anxious to keep the expenses for driving a car as low as possible. It is to be noted that the demand for Aethylenglycol antifreeze products has decreased since the C. C. C. C. is able to entirely meet the demand. The fact that the need for Aethylenglycol could not be met in previous years obviously increased the demand. Furthermore, the great profit favorably affected the sale of Aethylenglycol, which profit has been made by the companies which distribute Aethylenglycol. We are told, for instance, that the Aethylenglycol of the C. C. C. C., which is sold to the retail trade at $2.65 per gallon, is delivered to the jobber at $1.32.

"The use of antifreeze products seems to have been increased beyond the practical necessity by the very impressive sales propaganda. In this connection, it is interesting to know that the New York taxi drivers, who earn their living from driving their cars and who have to exercise the greatest economy, use only two quarts per car and not two gallons per car. Through experience they have found that this quantity is absolutely sufficient to prevent continuous freezing, and that a light snowfall does not do any harm to their machines" (exhibit 6).

STANDARD, I. G., AND DU PONT NEGOTIATIONS RE METHANOL

In 1934, Standard, through the Standard Alcohol Co., was interested in the production of ethyl (or grain) alcohol, and it was concerned because of the fact that du Pont was also interested in the production of ethyl alcohol. On October 12, 1934, Mr. Howard wrote to Standard's coordination committee that:

"I advised the du Pont Company nearly two years ago, when the question of greatly expanding the lead market by its use in nonpremium fuel was under consideration, that the Standard Oil Company of New Jersey were potential producers of ethyl alcohol, and that if we continued to permit the du Pont Company to have a monopoly on the manufacture of tetraethyl lead, we would consider that we were justly entitled to the alcohol supply business, when and if we became producers" (exhibit 7).

He continued by recommending a full discussion of this subject with du Pont before anything further was done in regard to synthetic alcohol production.

Digitized by Google

Nothing further was done until January 6, 1936, when Mr. Bedford, an executive of Standard, wrote to Mr. Teagle that the alcohol problem had reached such a stage that "we must either fish or cut bait" (exhibit 8), and therefore the future policy of the company should be worked out at this time. Mr. Howard was sent a copy of this letter, and he replied to Mr. Bedford on February 4, 1936, and said that the "following specific points require clarification before any ultimate decision can be made: (1) The views of our I. G. friends on the subject of our producing Methanol in the United States and the cost and prospective profits of this venture. (1) * * *. (3) The result of any discussions with the du Pont company along the line which Mr. Teagle has instructed me to follow in connection with the development of the ethyl lead and raw materials business at Baytown" (exhibit 9).

On April 27, 1936, Mr. Howard wrote to Mr. Teagle that in view of the necessity of moving as quickly as possible in regard to the ethyl matter "it also becomes desirable to move as fast as we can with our parallel discussions with the du Pont Company." Mr. Howard continues:

"It was specifically agreed between myself and Dr. von Knieriem of the I. G.'s consenting to license us and give us their experience for this Methanol alcohol production, we would clear the matter with du Pont Company in some proper way, making it clear to them that nothing inimical to their interests in the chemical business was intended by this new venture of our own entered upon with the assistance of the I. G. It is quite certain that out of any discussion * * * there will arise the general question of the place and ambition of the Standard Oil Company in the chemical field. *It is my proposal that I should not take any definite position at all in this matter except to assure Mr. Crane (du Pont) that fundamentally our purposes is to work in cooperation with the du Pont Company and to avoid, if at all possible any direct conflict with their commercial interests in the chemical field*" (exhibit 10).

On July 10, 1936, Mr. Howard wrote to Mr. Fisher of Standard, that the Standard Alcohol Co. purchased approximately one-and-a-half million gallons per annum of methanol, which was required in its antifreeze business and—

"The I. G. are willing to license us under their synthetic Methanol process to produce this material; they make it a condition of the license that we should advise du Pont what we are proposing to do in order to avoid, if possible, any difficulties with them. Du Pont suggested that we name it a figure at which we would be willing to purchase our supplies from them rather than engage in manufacturing ourselves" (exhibit 11).

Mr. Howard ended his letter by saying that he was glad that they did not have to make an immediate decision on this question, because it involved not only supplies for the antifreeze business, but also the question of much larger supplies from du Pont for other chemical purposes.

In the middle of 1936 a study was made by Standard to determine whether or not it would be desirable to install methanol producing facilities at Baton Rouge to supply all of the company's requirements for its antifreeze business. At a meeting held in August 1936 of Standard's chemical committee, composed of F. W. Abrams, F. H. Bedford, Jr., R. W. Gallagher, R. T. Haslam, H. C. Weiss, and H. W. Fisher (which will hereinafter be referred to as the chemical committee), it was decided to obtain the views of Mr. Howard, who was in Germany at that time. Mr. Howard was still interested in approaching du Pont before any decision was to be made. By cables on August 10 and 11, 1936, Howard suggested that the chemical committee develop "with du Pont the price to which du Pont would be willing to supply us with Methanol."

Mr. Howard suggested that no definite offer be made "du Pont at this time, and that in discussing prices, it be made plain to them that we cannot yet tell whether the prices given would be satisfactory."

Mr. Howard also advised the chemical committee how the Robinson-Patman Act could be circumvented in the event du Pont contended the Patman Act prevented them from quoting to Standard a lower price for methanol than other purchasers.

"* * * if du Pont feels unable to quote low prices because of the Patman law, separate purchase agreements might be made with the Alcohol Company under which du Pont could take from the Alcohol Company sufficient quantities of products at satisfactory prices to bring about the desired results" (exhibit 12).

Of course, Mr. Howard was insisting that the chemical committee designate some representative to discuss the alcohol project with du Pont before any active policy was formulated, because I. G. was making it a condition to the granting of a license to use its process. On August 14, 1936, Dr. Hopkins wrote

Digitized by Google

to Mr. Bedford that it was very urgent that methanol be produced at Baton Rouge by the I. G. process. He stated, however, that "the first step is to meet the I. G. request that du Pont agree to our using the I. G. Methanol process. It is my understanding that du Pont has expressed a willingness to agree, providing we name them a price at which we would buy from them in preference to manufacturing" (exhibit 13).

Dr. Hopkins ended his letter by suggesting that Mr. Russell be authorized to develop with du Pont the price at which they would be willing to furnish methanol, and also that "Standard should not be limited to the antifreeze market in selling methanol."

The chemical committee followed Dr. Hopkins' suggestion and on August 31, 1936, Mr. Fisher wrote to Mr. Bedford, with copies sent to all members of the chemical committee, that he and Mr. Russell "in accordance with permission granted by the Chemical Committee" had approached the du Pont Co. on "the alternative of either manufacturing Methanol ourselves or obtaining it from them at a price comparable to our estimated cost" (exhibit 14).

On August 21, 1936, Mr. Howard wrote a letter from London to the attention of Messrs. Russell, Currie, and Fisher, stating:

"We have the following problems to meet: We are in immediate need of licenses, experience, and help from the I. G. on the following subjects: (*a*) production of Methanol, (*b*) production of ethyl chloride. The methyl alcohol is needed primarily by the Standard Alcohol Company for its own business.

"The I. G. have immediate need from us for licenses and technique for the production of isopropyl ethers for aviation gasoline. They also desire to have available to them for future use licenses and technique for the production of ethyl and higher alcohols from olefins" (exhibit 15).

Howard then outlined his ideas as to how the whole matter should be handled and stated the desire that he wanted the approval of the chemical committee to his proposal by August 31, "since I expect to be again in Germany during the following week."

Before receiving an answer to his letter of August 21, Mr. Howard cabled Russell on August 24, 1936, that he wished presented to the chemical committee within the next week a proposal which he had developed with I. G. "as a possible method of meeting mutual problems and is now being considered by the organization."

This proposition was that Standard Alcohol and Standard Oil Development Co. grant to I. G. an exclusive royalty free license for Germany on all patents relating to the use of isopropyl ethers in gasoline and production of methyl alcohol, etc., in return for which I. G. "will grant to the Standard Alcohol Company and the Standard Oil Development Company an exclusive royalty free license for the United States for the same field as above."

He stated that if the proposal outlined in his cable were approved in principle, "I believe detailed contracts acceptable by all parties will result * * *" (exhibit 16).

The chemical committee had several meetings to consider Howard's suggestions. The committee cabled Mr. Howard on September 10 and pointed out changes that would have to be made in the contract between the Standard Alcohol Co. and the Standard Oil Development Co. dated October 1, 1932, in order to have a "suitable basis for negotiations with the I. G."

Mr. Howard disregarded practically everyone of the chemical committee's suggestions in drafting an alcohol agreement with I. G.

I. G.-STANDARD ALCOHOL CO. AGREEMENT

A conference was held at Baden-Baden on September 9, 1936, attended by Dr. Ringer and Dr. Holdmann of I. G., and Mr. Howard, Mr. W. R. Carlisle, and Mr. W. C. Asbury of Standard (exhibit 17). At this conference the I. G. members felt that the use of the methanol process by the Standard Alcohol Co. would have to be limited to the antifreeze field, as the I. G. had some market for methyl chloride in the United States at that time. A full discussion was had on the whole alcohol problem and a general proposal was drawn up.

Mr. Howard reported on his negotiations to the chemical committee, and Mr. Fisher wired Mr. Howard on September 24, 1936, that he, Russell, and Currie "believe proposed agreement satisfactory except for restrictions on Methanol (stop) now using Methanol as constituent of mixed solvent formulas and desire freedom use Methanol as raw material for methyl chloride and other possible derivatives" (exhibit 18).

Digitized by Google

Another wire was sent by Fisher to Howard on September 25, in which he stated that the chemical committee "agree alcohol deal except limitations on uses alcohol should preferably be only those on which I. G. committed itself to others because Standard Alcohol now has wide variety uses for Methanol" (exhibit 19).

Howard disregarded the suggestion of the chemical committee and wired Fisher on September 28, 1936, that he had completed the agreement in principle on the general basis decided upon at Baden-Baden. This information was presented to the chemical committee by Mr. Fisher on October 20, 1936, along with a copy of the agreement (exhibit 20).

Because of the importance of this agreement and the many restrictions it contains in regard to the use of the licenses granted, it is thought better to quote verbatim the most important provisions:

"ALCOHOL—ALKYL CHLORIDE

"*Agreement in principle*

"Standard Alcohol grants to I. G. for Germany and I. G. grants to Standard Alcohol for U. S. A. royalty-free exclusive transferable licenses for all processes for the manufacture of: (*a*) ethyl to hexyl monovalent alcohols from olefines, (*b*) the corresponding ethers from the olefines directly or from alcohols made from the olefines.

"(2) The exclusive license granted by Standard Alcohol to I. G. for Germany shall be subject to the right of Standard to use its own inventions royalty-free for its own oil business in Germany and to license Shell to use said invention for Shell's own oil business in Germany, and the exclusive license granted by I. G. to Standard Alcohol for U. S. A. shall be subject to the right of I. G. to use its own invention royalty-free for its own chemical business in U. S. A.

"(3) Above grants do not include any inventions for the use of the products in question or for new compositions including them, but Standard Alcohol will also grant to Development the right to pass to I. G. under the Four-Party Agreement all its inventions relating to above products and their use insofar as the same are under the hydrocarbon field so that as to such products I. G. has the same right as though the inventions of Standard Alcohol belonged to Development.

"(4) I. G. grants to Standard Alcohol for the U. S. A. and Standard Alcohol grants to I. G. for Germany royalty-free nonexclusive nontransferable licenses for all processes for the manufacture of ethyl nonchlorides from alcohol or ethylene for use in the manufacture of alkyl lead compounds only.

"(5) Both parties agree in principle to grant each other nonexclusive nontransferable licenses for any processes for the manufacture of ethyl-monochloride for use in the manufacture of ethyl lead using as a starting material other products than alcohol or ethylene and any process for the manufacture of methyl or propyl monochloride for use in the manufacture of alkyl lead compounds only. These licenses, however, shall not be royalty-free, the royalty basis for any of such processes shall be 25% of the improvement in manufacturing costs over the processes otherwise available to the party, provided such costs can be accurately determined, otherwise the royalty shall be fixed by agreement as nearly in accord with this principle as is practicable.

"(6) I. G. grants to Standard Oil Development for the U. S. A. and Standard Oil Development grants to I. G. for Germany a royalty-free nonexclusive nontransferable license for the manufacture of Methanol for antifreeze and for use for the production of methyl-chloride for manufacture of alkyl lead compounds only."

* * * * * * *

Later correspondence clarifies the intention of the parties in reference to this agreement. On December 26, 1939, Mr. Mueller of Chemnyco wrote to Mr. Howard that in reference to article 6 of the agreement:

"There can be no doubt that the parties to the agreement are not allowed to export Methanol, produced under the license in question, from the United States and Germany, respectively, to countries where the other party owns corresponding patent rights, and the respective patent laws prohibit the importing of a product manufactured under a patented process. With respect to imports into countries, however, where these two provisions do not apply, Article 6 seems not entirely clear to us and we would, therefore, appreciate your letting us know whether you concur in I. G.'s opinion that Article 6 is to be interpreted that the

Digitized by Google

Methanol produced under this license can only be sold in the United States and Germany, respectively" (exhibit 21).

Mr. Mueller also pointed out that I. G. agreed that although in the license agreement of September 1936—

"* * * The use of the Methanol manufactured under the license is restricted to the antifreeze field and to the production of ethyl chloride and manufacture of alkyl lead compounds, you may sell certain surplus quantities for other uses; payment of a royalty to I. G. being contemplated for such sales. As far as we recall, the question as to whether or not the sale of these surplus quantities should be restricted to a certain territory has never been discussed. In view of I. G.'s desire, as expressed above, we ask you to kindly agree that such surplus quantities are to be sold only within the United States" (exhibit 21, supra).

On December 29, 1939, Mr. Howard answered Dr. Mueller's letter and said that:

"I agree that it was the intention of the parties that the licenses granted under Article 6 should not carry with them any rights to export the material involved as such, and I agree that the same limitation applies to the surplus quantities to be manufactured by us in the United States under an agreed royalty. In all cases, however, I have also assumed that there would be no restriction at all on the export of products produced from the Methanol produced under the licenses" (exhibit 22).

Dr. Mueller replied to this letter on May 9, 1940, and said that he had taken the matter up with I. G. and that he had been informed—

"* * * that they have no objection to the exports of products produced from the surplus quantities of Methanol manufactured by your company in the United States under an agreed royalty, and that the same applies to antifreeze containing Methanol, provided the antifreeze cannot economically be used as starting material in the production of Methanol. With regard to methyl chloride produced from Methanol for the manufacture of alkyl lead compounds, I. G. states that, in granting a license under their respective patent rights to your company, it was not their idea that this license should include the permission to ship the methyl chloride out of the United States and work it into alkyl lead compounds abroad. I. G. would appreciate it if you would agree to it" (exhibit 23).

On June 7, 1940, Mr. Mueller of Chemnyco wrote to I. G. that "the following is agreed upon in regard to the exporting of Methanol and such Methanol products which are to be used in further manufacturing processes:

"1. Methanol as such is not to be exported by Standard.

"2. Products which are to be used for further manufacturing processes and which are manufactured by adding Methanol, for which Standard pays a special license fee, may be exported.

"3. Antifreeze products which are manufactured from such Methanol for which no license has to be paid may be exported, unless the antifreeze products shall be used as basic material for the manufacture of Methanol in the country to which it will be exported.

"4. Methyl Chloride manufactured from Methanol is not to be exported for the purpose of transforming it into lead alkyl compounds abroad" (exhibit 24).

The committee has probably already noticed that du Pont is not mentioned in the agreement. The correspondence also clears up this apparent oversight.

On October 6, 1936, I. G. wrote to Mr. Carlisle that the memorandum prepared in Berlin in September had been approved by I. G., but pointed out:

"As a matter of record we would like to mention that with regard to the license for Methanol for antifreeze (paragraph 6 of the Berlin memorandum), we were asked whether the reservation our people had to make with regard to du Pont was understood between you and us, although it is not specifically mentioned in the paragraph referred to. We have no doubt whatsoever that this is the case, and are mentioning this point only for the sake of good order" (exhibit 25).

This letter was forwarded to Mr. Howard on October 12, 1936, and as to the question raised by I. G. regarding du Pont, it was stated that he had assured I. G. "that the reservation regarding du Pont is understood by you" (exhibit 26).

On November 16, 1936, Mr. Howard cabled Mr. Carlisle in regard to further details on Methanol:

"This may refer to one of two matters: (1) Definite confirmation by us of acceptance agreement arrived at and brought back by me (stop) you are author-

Digitized by Google

ized to transmit this (2) additional information or understanding that we would not build Methanol plant without first discussing matter with du Ponts (stop) we have made contract with du Pont for one year's supplies beginning next summer and are at the same time discussing with them our estimated investment and operating costs, with understanding that if they are willing to give us supplies at price level not showing satisfactory return on our investment we will take from them (stop) they seem entirely satisfied with our position" (exhibit 27).

SUMMARY OF THE AGREEMENT IN PRINCIPLE

The most important points in the "Agreement in Principle" of September 1936, may be summarized briefly as follows:

(1) The National Distillers Products Corporation, which held a 35 percent interest in the Standard Alcohol Co., were not either invited to take part in nor consulted about, any of the discussions between Howard and the I. G. In fact, Messrs. Russell, Murphree, and Fisher were afraid the "scheme might result in bringing the company (National Distillers Products Corporation) with large minority interests into a field of major potential profit possibilities" (exhibit 28). Mr. Howard replied (cable of August 31, 1936) that this was a secondary matter to be decided between the two companies (Standard and National Distillers Products Corporation) after the major agreement between I. G. and Standard was disposed of. He concludes with: *"Specifically I propose to change the entire method of handling alcohol company business, and by agreement every one concerned (agrees this) converts it virtually into a development of our company with minorities regarding themselves only as investors"* (exhibit 29).

(2) The agreement supplemented and in no way conflicted with the four party agreement of November 9, 1929 (exhibit 30). Article 2 reserves to I. G. the use of its own inventions for its own chemical business in the United States. Article 3 requires that Standard Alcohol grant to Standard "the right to pass to I. G. under the four-party agreement all its inventions, etc."

(3) The agreement limits Standard's use of methanol to the antifreeze market alone.

(4) Article 6 restricts Standard from exporting methanol and limits its sale of the product to the United States, and conversely, I. G. cannot export methanol from Germany and is limited to sale within Germany. (This is not stated specifically in the agreement, but is brought out clearly in the correspondence quoted, supra.)

(5) Subsequent exchange of telegrams between the parties show that it was understood by Standard that as one of the conditions to the agreement arrived at in September 1936, was that before Standard would construct any plant to operate under I. G.'s methanol license, it would approach du Pont and explain to them its intentions, with the understanding that if du Pont were willing to supply methanol to Standard at a satisfactory price, Standard would purchase all its supplies from du Pont.

SUBSEQUENT NEGOTIATIONS

Mr. Fisher was not at all satisfied with the provision in the agreement that Standard could use methanol only in the production of antifreeze. He wrote to Mr. Howard on January 13, 1937:

"You have previously indicated that, with further negotiation, the I. G. might be willing to remove this restriction. May I suggest that you develop this possibility with the I. G. on your next visit if possible" (exhibit 31).

During the middle of 1938, Standard was considering the possibility of Jersey making use of its gas supplies and making the best advantage of its alcohol processes and patents. A meeting was held by the chemical committee on July 15, 1938, to study the "utilization of Jersey's surplus hydrocarbon gases and chemical manufacturing (exhibit 32).

Mr. Murphree, in a letter of July 25, 1938, to Mr. Fisher and Dr. Hopkins, emphasized one of the main restrictions contained in the September agreement with I. G.; he says:

"In the case of the Methanol operation, there will be 1,500,000 gallons of Methanol to dispose of on the open market. Our agreement with I. G. does not allow us to market Methanol, and some further arrangement will have to be made with them before this will be feasible" (exhibit 33).

Digitized by Google

Because of Murphree's letter, Dr. Hopkins wired Carlisle in London on August 31 that it would be helpful to obtain, if possible, I. G.'s consent to marketing Methanol outside the antifreeze field.

All during the year 1938, Standard had conferences off and on with du Pont in regard to furnishing Standard with methanol. Of course, Standard was holding a club over du Pont's head, in that if du Pont did not furnish them with methanol at a price which Standard considered to its advantage, then Standard would construct a methanol plant, using the I. G. process.

As a result of these negotiations, there was executed on December 29, 1938, an agreement between Standard Alcohol and du Pont that was to run from January 1, 1939, to December 31, 1939 (exhibit 34). Under this contract, Standard agreed to take a minimum of 2,500,000 gallons and a maximum of 3,000,000 gallons per annum of methanol at 17½ cents per gallon in tank car shipments, f. o. b. Belle, W. Va.

Standard continued to use this bargaining position with du Pont during the year 1939. On October 17, 1939, Mr. Hopkins wrote to Mr. Howard:

"Our antifreeze business depends upon the ability to obtain Methanol at a satisfactory price. As long as du Pont knew that we could use an I. G. process to manufacture Methanol they were willing to offer us terms, which make a plant of our own only fairly attractive. If, as a result of war conditions, we are not able to build a plant, it is to be expected that there will be difficulty over extending the present agreement" (exhibit 35).

The contract with du Pont in regard to furnishing methanol to Standard was renewed for another year on December 11, 1939, at the same price of 17½ cents per gallon (exhibit 36). Mr. Hopkins wrote to Mr. J. W. Casterton on January 25, 1940, informing him about the contract that had just been executed with du Pont. In this letter he says:

"As you know, it has been our policy to obtain protection by contract sufficiently in advance to permit time to construct a plant in case du Pont decides not to continue to give us favorable terms" (exhibit 37).

Apparently, the contract with du Pont was renewed for the year 1941, as a memorandum in the files dated June 27, 1941, states:

"Early this year du Pont notified us that they would probably be unable to supply our full requirements of Methanol. In general, the reason for this was that plant capacity previously used for manufacturing Methanol was being rapidly converted to the production of ammonia, which, in turn, is urgently required for the manufacture of nitric acid used in the production of munitions" (exhibit 38).

On the same day there was drawn up a request to Standard's executive committee for an appropriation to install a methanol plant for a capacity of 6,000,000 gallons per year (exhibit 39). It is my information that this plant was started, but I do not know whether or not it has been completed.

The following table is presented to this committee to show the published price of methanol during the period Standard purchased its requirements from du Pont:

Published prices of methanol—tank-car lots—f. o. b. works

[Source: Bureau of Labor Statistics]

From—	To—	Price per gallon
		Cents
January 1939	March 1940	33.
March 1940	April 1940	32.4
April 1940	August 1941	30.

The committee will recall that during the period covered by the above table, Standard received its methanol requirements from du Point at a price of 17½ cents per gallon, which is almost one-half the published price.

Mr. Howard, in a report to the executive committee on December 17, 1940, admitted that the contract price at which Standard received its methanol from du Pont was much lower than the market price.

"Mr. Howard stated that in Section II of the Standard Oil Development Company's 1941 Capital Budget there is $1,250,000 for a methanol plant, which is under

Digitized by Google

consideration because an important percentage of this material, which is used in Company interests' anti-freeze, is purchased from the Du Ponts. In 1939, 2,500,000 gallons were so purchased in 1940, 3,100,000 gallons were purchased from the Du Ponts, and estimates for 1941 indicate 3,500,000 gallons and for 1942 slightly over 3,500,000 gallons. There is some question whether such quantities could be secured from Du Ponts and, even if they could, whether it is advisable to do so when it is considered that a saving of 30% can be made by a plant for the manufacture of this material as compared with the price which is paid on the Du Ponts, *this in face of the fact that the 17¢ per gallon contract price with Du Pont is considerably below the going market of 25¢ per gallon*" (exhibit 40).

I. G.'S METHANOL CATALYSTS

All of the catalysts used by I. G. in the production of methanol apparently were not included within the September 1936 agreement. At a meeting held in England on March 19, 1937, between I. G. and Mr. Howard, it was brought out that—

"I. G. did not contemplate giving Standard experience on the preparation of the Methanol catalysts. * * * If for any reason it is not advisable to purchase the catalyst from the I. G., the Standard is free to go ahead with its own Methanol catalyst manufacturing, having a license under the I. G. patents for the preparation of a methanol catalyst. It is clearly understood, however, that the I. G. cannot give us any of the very special technique and experience which they have developed for the preparation of this catalyst" (exhibit 41).

Again on October 20, 1939, Mr. Fisher wrote to Mr. Howard that he considered Standard's bargaining position with respect to du Pont is exactly as good as it was before, "with some slight question as to the catalyst."

"You will recall that I. G. did not wish to disclose to us the method of manufacture of their latest and most efficient Methanol catalyst. About a year ago Dr. Hochschwender and Dr. Mueller agreed to have this information available here in New York so that we could get it in case of an emergency" (exhibit 42).

It appears from the letter that the information as to the catalyst was not in New York at that time.

A conference was held on February 2, 1939, between Mr. Howard and Mr. Russell, of Standard, and Drs. Hochschwender and Mueller, of Chemnyco, to discuss methanol problems. Standard officials explained the du Pont situation, and pointed out that they were worried about the question of the methanol catalyst. It was finally agreed that Standard would purchase its supply of catalysts from the I. G. and "as a further protection in the case of an emergency, the I. G. are willing to dispose in the United States full directions for the manufacture of its catalysts, which would be available to us if necessary" (exhibit 43).

Mr. Hopkins informed Mr. Howard in October 1939 that—

"No additional information is needed from the I. G. to build a plant, but we are dependent upon them for catalysts. Chemnyco advises Bud Fisher that we can purchase the catalysts from Germany under present conditions. * * * Bud suspects that Chemnyco has directions for making catalysts in this country, but they could not say so until authorized by I. G." (exhibit 44).

On January 24, 1940, Howard received a letter from Hutz & Joslin, patent attorneys for I. G. in the United States, in regard to the methanol catalysts. In this letter it is stated:

"With reference to conversations had between Mr. Fisher and Dr. Mueller, I wish to confirm that I have received from I. G. sealed envelopes containing detailed instructions for the preparation of two catalysts, one known as 'K 5050' and the other as 'Braunoxyd'. I was informed by I. G. that these envelopes were being deposited with me pursuant to arrangements they have made with the Standard Oil Development Co. I am to turn over the envelopes to you in the event certain conditions are fulfilled and am to return the same to I. G. only in case the Standard Oil Development Co. agrees thereto. For the sake of convenience, I am giving you below a translation of I. G.'s directions regarding the deposit of said manufacturing formulae:

"We ask that you take these envelopes in safe-keeping and turn them over to the President of the Standard Oil Development Co. in the event the following conditions are fulfilled:

"1. The envelope entitled 'K 5050': In case the Standard Oil Development Co. addresses such a request to you and at the same time convinces you that a

Digitized by Google

need for methanol catalyst exists in the proposed Methanol Plant of Standard Oil in U. S. A. licensed by us, which need cannot in any way be filled by deliveries from us;

* * * * * * *

"Should the Standard Oil Development Co. have need for * * * the 'K 5050' * * * catalyst formulae, please let me know and at the same time give me the required proofs that the conditions precedent for the delivery of these formulae have been fulfilled" (exhibit 45).

Mr. Fisher wrote to Mr. Howard on November 25, 1940, stating that in his opinion it was necessary to secure from Hutz & Joslin the two sealed envelopes containing detailed instructions for the preparation of the methanol catalyst as soon as possible (exhibit 46).

Mr. Minton, secretary of Standard's executive committee, wrote to Mr. Howard on December 17, 1940, that the executive committee had confirmed his view of the probability of a shortage in domestic supplies of methanol, and it was "so real as to warrant the Standard Oil Development Company applying to the escrow agent for the release of the I. G. methanol formula, which the Committee understands is in that agent's custody in anticipation of the need which has now developed" (exhibit 47).

Two days later Mr. Howard directed a letter to Hutz & Joslin requesting the envelopes containing the methanol catalysts (exhibit 48).

Messrs. Hutz & Joslin answered Mr. Howard's letter on January 3, 1941, and stated:

"I have your letter of December 18, 1940, in which you requested that I turn over to you the envelope entitled 'K–5050' containing detailed instructions for the preparation of the methanol catalyst. You will appreciate from my letter of January 24, 1940, that it is my duty to convince myself that the conditions set forth in I. G.'s letter of transmittal actually exist before turning this envelope over to you. I feel reasonably certain that this is the case, but, as a matter of precaution, have cabled to I. G. upon receipt of your letter asking it to cable to me immediately whether it can guarantee prompt delivery of large requirements of the methanol catalyst in this country. No reply has yet been received and I intend to send a follow-up cable, if none comes in within the new few days" (exhibit 49).

Messrs. Hutz & Joslin addressed another letter to Mr. Howard on January 13, 1941, and stated they had received an answer from I. G. in regard to the methanol catalyst.

"In this answer I. G. advises that it is prepared to supply Standard Oil Development Co.'s requirements of methanol catalyst via Japan.

"In view of I. G.'s advice I would suggest that you immediately place an order with I. G. for the amount of catalyst which is needed. You should emphasize your desire to have the material delivered to you as soon as possible I assume from I. G.'s cable that I. G. can arrange to make delivery within a reasonable time. Should you fail to obtain such delivery, please let me know" (exhibit 50).

On February 6, 1941, Mr. Howard addressed a letter to Hutz and Joslin and said:

"Our people have been trying to get methanol catalyst from the I. G. since November 8, 1939, on which date an order was placed for 500 pounds. It is our understanding that the I. G. did actually make shipment of this order but it got only as far as Rotterdam. Our representative in the Netherlands at the time, who is now in the United States, was advised in correspondence with the I. G. that they had effected delivery of the material to the extent that the matter was under their control and under existing circumstances they could not assume any responsibility for materials after they left the boundaries of Germany proper. The whereabouts of the catalyst at the present time is unknown.

"If we ordered another batch of catalyst from I. G. they could assume no responsibility for its movement after it left Germany. They can, therefore, in no wise insure delivery to the United States.

"Our need for the catalyst is such that we cannot take the time to place another trial order and wait to see whether or not it is delivered. Furthermore, if one batch of catalyst were delivered, we would have no assurance of being able to continue to operate the plan since operation would be entirely dependent upon obtaining a continuing supply of replacement catalyst.

"Under existing world conditions, the only way we can operate satisfactorily is to know how to make the catalyst ourselves. *It was in anticipation of exactly such conditions that the I. G. deposited the catalyst information with you.*

Digitized by Google

"In view of this record and the fact that our plans to take care of methanol requirements are already seriously jeopardized, I believe you will agree that the conditions set forth in the I. G.'s letter of transmittal of the envelope containing methanol catalyst instructions actually exist and that the envelope should be turned over to us immediately" (exhibit 51).

Apparently Hutz and Joslin still insisted that the conditions upon which the methanol catalyst had been left in their custody by I. G. had not been fulfilled by Standard, because on March 4, 1941, Mr. Fisher of Standard addressed another letter to Hutz and Joslin in which he stated that the I. G. have been unable to guarantee delivery and that the estimated delivery time was 3 months, which he considered entirely too long for Standard to wait.

"In view of the situation as it has developed, we would appreciate your prompt advice as to whether you consider that you are justified in delivering to us the catalyst manufacturing information which you hold. In case you do not, we shall immediately place an order with the I. G. although as stated above, delivery within the time estimated will seriously handicap us. Since the I. G. are unable to guarantee delivery and only estimate it, and apparently assume no responsibility for it, failure to deliver within three months would place us in a most serious position" (exhibit 52).

Finally Messrs. Hutz and Joslin transmitted to Mr. Howard on April 2, 1941, more than 3 months after the request had been made, the sealed envelope containing the method of preparing I. G.'s methanol catalysts. This information was transferred to the executive committee by Mr. Howard on the same date it was received.

CONSENT DECREE

Under the consent decree entered in the *Standard Oil case* at Newark, N. J., the methanol agreement of September 1936 was adjudged unlawful under the antitrust laws and Standard was enjoined and restrained from the further performance of any of its provisions. The methanol patents of both Standard and I. G. were opened to the public royalty free during the duration of the emergency.

CONCLUSION

This alcohol project emphasizes the cooperation which existed between I. G., du Pont, and Standard in that as a condition precedent to the granting of a license to practice the Methanol process, I. G. required Standard to satisfy du Pont as to its ambitions in the chemical field. In other words, I. G. demanded that Standard convince du Pont "that nothing inimical to their interests in the chemical business was intended" by I. G. in granting to Standard the right to operate under I. G.'s methanol process. We have also seen that Standard was not interested in competing with du Pont in the chemical field but, rather, adopted a policy which had as its "fundamental purpose" to cooperate to the utmost with du Pont.

The following facts may be deducted from the evidence submitted in this statement:

(1) Standard, by an agreement in 1936, received the right to I. G.'s methanol process in the United States.

(2) I. G. demanded that Standard work out a satisfactory agreement with du Pont before going into the production of methanol.

(3) Standard did not receive from I. G., when the contract was executed in 1936, the "special technique and experience" which they (I. G.) have developed for the preparation of this (methanol) catalyst. It seems fair to assume that Standard never did seriously contemplate using I. G.'s methanol process because it did not receive this "special technique and experience" from Hutz & Joslin, I. G.'s patent attorneys in this country, until April 1941. Therefore, it appears that the only reason Standard wanted this license agreement with I. G. was to use it as a bargaining power against du Pont in order to obtain a favored price on its purchases.

(4) Standard purchased its methanol requirements from du Pont from January 1939 through the middle of 1941 at a price which was approximately one-half the published price as shown by the Bureau of Labor Statistics.

(5) Standard, because it purchased its requirements of methanol from du Pont at a price lower than other purchasers, did not start construction of a methanol plant until late in 1941.

(6) Standard has a surplus of refinery gases in 1938 from which to produce methanol, as Standard's chemical committee met on July 15, 1938, to study the "utilization of Jersey's surplus hydrocarbon gases and chemical manufacturing."

Digitized by Google

From I. G.'s standpoint, it appears reasonable to conclude that it used the 1938 agreement with Standard not only to receive strategic information from Standard to produce isoprophyl ether for aviation gasoline and to satisfy du Pont that I. G. was not going to compete with them in this country in the chemical business, but also to prevent Standard from constructing a methanol plant in this country. I. G. could have relied upon the fact that by requiring Standard to offer to purchase its requirements of methanol from du Pont before it constructed a plant, that du Pont would make every effort to prevent Standard from constructing this plant and thereby becoming a producing competitor to du Pont. This of course is exactly what occurred. I. G. also knew that by preventing Standard from constructing a plant to produce methanol it would later retard our defense program because the plant could be readily converted into the production of ammonia, which in turn, could be used in the production of munitions.

This committee will recall that I. G. used its methane steam patents in this country in such a way that it hindered two of our leading explosive companies from obtaining licenses to use this process. This same motive could very well have been paramount with I. G. in licensing its methanol process.

The use of the methanol patents in this country is another example of how a cartel arrangement between two large corporations operates to the detriment of the public. If Standard had constructed a methanol plant and gone into production instead of relying upon du Pont, it is fair to assume that this country would be further advanced in its productive capacity.

EXHIBIT 141

STATEMENT BY WILLIAM S. FARISH, PRESIDENT, STANDARD OIL CO. (NEW JERSEY)

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: Because these hearing were begun after we were at war, we assume that their primary purpose was to obtain opinion and data on changes which might be made in our patent laws to aid the war effort.

We are not experts in patent law. We are in the oil business. The oil business is one of the country's basic industries. It is conducted on a highly competitive basis. We do approximately 10 percent of the over-all oil business of the United States. To compete successfully in our industry we find it necessary to conduct a most aggressive campaign of research and development work and to improve constantly our processes, equipment, and products.

As a result of our efforts and expenditures, those employees of ours who are engaged in development work make a considerable number of new discoveries and inventions. On these inventions we take out patents. Our principal reason for taking out a patent is that it is the best evidence that the invention originated with us. It is the best way of meeting claims by other people that they invented it before we did.

A patent also gives us rights which we can exchange for other rights needed by us but held under the patents of other people. In almost every major line of progress in the oil industry several companies are always at work trying to solve new problems, and the general result is that each makes contributions toward the desired improvement. The processes and equipment used for most of the major operations in the oil industry are so complex that they represent an assembly of a very large number of inventions. Each of these inventions is covered by a separate patent. Sometimes the inventions originate with independent inventors, although most of them originate with the various companies in the oil industry who have been working in that field.

Let me give you an example: Company A may have developed, in crude form, a new chemical synthesis by which an old product is more cheaply made from some abundant raw material not previously known to be a source. Company B, taking the cue, evolves and patents new apparatus which will react A's materials in a much more efficient way than A had discovered. Company C, pursuing the matter still further, discovers and patents a catalyst which when used in B's apparatus will greatly hasten the reactions involved in A's synthesis.

All three companies are in the business of selling the old product. Without merging their patented knowledge, none of them may use the best form of the

Digitized by Google

new method of making the product; that is, C's catalyst in B's apparatus to carry out A's synthesis. Obviously, no one of them alone may lawfully do so. Company A cannot, because he would infringe patents held by B and C. Company B and C cannot because, if they did, they would infringe patents held by A.

As a result, the public interest in getting new and cheaper products is blocked, for without some solution to the problem the patented knowledge may be forced to lie idle. Clearly, public interest demands that Company A and Company B and Company C get together.

PATENT POOLS

As a practical matter, modern industry has had to find its own solution to this problem in the so-called patent pool. Parties who have contributed to the development and perfection of a new process find it necessary to get licenses under one another's patents. They also find it necessary to pool, or merge, their licensing rights under all the necessary patents so that other companies who wish to use the process but who have made no important contributions to its development can themselves get the right to use it by making a single contract and paying a single reasonable royalty. Such pools have now been formed at the request of the Government for synthetic rubber and the raw materials used in synthetic rubber. The Government has repeatedly recognized the advantages of patent pools in the public interest.

The situation with regard to specialties or new products differs somewhat from that involving major oil products. In the oil industry, as in most other manufacturing industries, it is natural for a company to wish to specialize in certain limited fields and to enjoy the reputation of being the outstanding supplier, or the sole supplier, for some special product.

The development of a profitable business in a new specialty is usually a difficult undertaking. A very large proportion of all the enterprises of this kind—even when started by the most experienced companies—are commercial failures, often after large expenditures for research and technical and commercial development. The successful ventures must therefore not only pay their own cost, but must also pay for the unsuccessful ones.

A fair patent system provides about the only workable form of incentive we know of which will actually result not only in continuous creation of new products, but in launching new enterprises based upon them. The prospect to the inventor of a 17-year exclusive right, during which he may make good profits if he is successful, does not provide any too great an incentive to developments in this field, and it is indispensable as an attraction of capital to a new enterprise.

GOVERNMENT RIGHTS

Government can never be blocked by patents. Since 1910 Government has had the statutory right, in time of war as in time of peace, to use any patented invention for its own purposes. Largely through the efforts of President Roosevelt in 1918, when Assistant Secretary of Navy, this right of government to use all patents was broadened by an amendment to the law so that not only Government but anyone else acting for it, or manufacturing goods for the Government, could utilize any patented invention without consent of the owner or without any negotiation with him.

Much of the testimony before his committee seems to have ignored these existing statutes completely, and has created the widespread impression that patents or patent agreements have actually prevented the Government from getting war materials manufactured. This, so far as our company is concerned, is not borne out by the facts.

While the purpose of these hearings was to gather opinion on proposed legislation, they have produced a secondary result which is very much our concern. Statements made by witnesses before this committee, widely publicized in the press of this whole Nation, were based upon misinterpretations of contracts, bolstered up by selected paragraphs, memoranda, and letters from our files. This was after months of examination of the files of our company, with our full cooperation to help get at the whole facts of the matter.

There are more than 50,000 American employees in our company. I have the responsibility of speaking for them. Like me, they and all other red-blooded Americans know that a man's reputation among his fellow human beings is the most precious thing that a man—or a company—possesses. I hope, therefore, that you will let me take the time here to set the record straight.

Digitized by Google

The case which the witnesses attempted to build against Standard Oil Co. is a jerry-built house. And the foundation of sand upon which the whole thing rests is the assumption that the executives of our company—representing a typical cross-section of America, some veterans of the last war, some now in the armed forces, some with sons how in our Pacific and Atlantic expeditionary forces—have for one single minute forgotten that the lifelong policy of every American is first, last, and always to put almighty America above any consideration of the almighty dollar.

And that assumption, gentlemen, hardly requires my challenge, since it is not true.

All of you know now the enormous advantages to the public of our contracts with I. G. Farbenindustrie of Germany.

Our first contract was made in 1927, a few months after Germany was unanimously elected to the League of Nations.

This was democratic Germany, and this was when it was taken into the League of Nations.

Although I first entered actively into the administration of the I. G. contracts some years after they were made, let me say that it is my own conclusion from a full knowledge of actual operations under these agreements that the United States got far more from Germany than Germany ever received from us.

We are human beings. In 1927 we could not foresee 1942. But I want to say to you gentlemen that if in 1927 and 1929 we could have read the future, if we could have known that the Japs would strike Pearl Harbor on December 7, 1941, we would have been even more anxious than we were to sign those contracts to permit us to weave into technical knowledge and experience of the industries of our country a large part of the technical advances of modern German science. From catalytic chemistry applied to the hydrocarbons of oil over the period of this contract have come a long list of the industrial miracles of our present war production.

Out of our relations with I. G. Farbenindustrie America got (1) the first process for producing 100-octane aviation gasoline, one thing which puts the planes of this country and the United Nations ahead of the Axis; (2) synthetic toluol, the basic ingredient of the military explosive TNT, which has tremendously increased our capacity to manufacture this war necessity here in the United States.

Half of the bombs we are dropping on Japs and Nazis are made possible by the research based on that contract with I. G. Farbenindustrie. Today military leaders look upon the long-range bomber as the greatest single potential weapon for winning this war. American industry has performed miracles in producing vast quantities of these bombers. Without synthetic toluol we could not have made use of half of these bombers—there would be no bombs for them to carry. And without the 100-octane gas bombers used in their motors, which also originated from what we learned from I. G. Farbenindustrie, they would not have the flying range to get there and back.

From I. G. we also got (3) the most modern and efficient methods and apparatus for the manufacture of synthetic ammonia, the other ingredient of TNT, from natural gas; (4) paratone, which greatly improves hydraulic and recoil oils, and is used in every fighting plane, tank, cannon, and ship in the Army, Navy, and Air Corps; (5) paraflow, which freeze-proofs our best motor oils; (6) Buna rubber processes, which today are the foundation of the American synthetic rubber program; (7) Butyl rubber, potentially the most important of all synthetic rubbers, and which was developed from (8) vistanex, one of the special types of German synthetics, which are better than natural rubber for certain strategic purposes.

The I. G. contracts started us on the road which led to work on synthetic rubber. We spent millions of dollars on rubber research and production facilities before Pearl Harbor. At the time of Pearl Harbor Standard Oil Co. (New Jersey) had under construction entirely with their own capital nearly 20,000 tons per annum capacity of synthetic rubber and synthetic rubber raw material, an amount almost as great as the German Government had provided for itself before it went to war. Every oil synthetic rubber plant now being built by the Government is being built in large part with our plans and as the result of our engineering.

Gentlemen, what do you think Hitler would give today to be able to keep America from using these discoveries and processes?

A little later on I want to take up, one after another, some of the distorted pictures painted by the witnesses who have appeared before you. Since they bear upon our contracts with I. G. Farbenindustrie, let me start at the beginning

Digitized by Google

and tell you the story of what these contracts were and how we came to make them.

You will recall the setting under which our negotiations began in 1925—17 years ago. When the Germans were defeated in 1918, one of our invisible allies was the movement toward democracy and the rebellion against autocracy among the German people themselves. Our Allied victory made possible the creation of a democratic form of government in Germany. It was this new democratic Germany, struggling toward a respected place among the family of nations, that we were dealing with when we made our agreements.

In 1925 several officials of the I. G. Farbenindustrie were making a tour of the United States and asked permission to visit one of our refineries. We took them through our New Jersey refineries and laboratories and invited them to lunch with our directors afterward.

At luncheon they told us they were themselves doing some scientific work on oil, and that when they had progressed further they would like to have us visit their laboratories.

WE ARE SHOWN I. G.'S LABORATORIES

The next year 1926, they invited us to visit them at Ludwigshaven, Germany. This invitation we accepted and we were shown there for the first time the laboratory and pilot-plant work being done on hydrogenation of coal and of oil. Remember, 1926 was the year that the Assembly of the League of Nations unanimously admitted Germany to the League and to a permanent Council seat.

We were impressed with the scale and efficiency of their research, with the progress they had made on hydrogenation and with the potential industrial value of these inventions. We at once expressed our desire to find some basis on which we could take part in this new development.

After a year of discussion an agreement was first arrived at in 1927, under which we took over a half-interest in the oil hydrogenation process in the United States only. We gave to I. G., in lieu of cash payment, a half-interest in the proceeds from licensing some of our own refining processes. Under this arrangement, the financial interests were therefore equal, no matter who originated the invention, but the agreement provided that the original owner would have the deciding voice in licensing it.

It was agreed that Standard and I. G. would cooperate technically to the fullest extent in improving oil-refining processes, especially hydrogenation.

The 1927 agreement was to run until 1952. Remember, 1927 was the year that Germany dynamited all of the fortresses on her eastern boundary in accordance with the Paris Agreement. Because of this relatively long term, and because the last patents which would come under the agreement would have a life of 17 more years, during which the parties would be forced to remain limited partners, it was realized that many unforseen situations would arise. It was apparent that we would have to rely more on good faith than on legalistic interpretations, if the arrangement was to be a workable one.

A LETTER OF GOOD FAITH

Someone suggested that this situation be met by supplementing the agreement itself with an exchange of letters between the heads of the two companies—a declaration of good intention, good faith, and desire on both sides to settle any future questions which might arise in the spirit of of our agreement, instead of attempting to stand always on strict legal rights as these legal rights, or the abilities of the parties actually to enforce them against one another, might change over the years.

Fifteen years later, the Antitrust Division labeled this letter, which had been carried forward in the same language when the parties made their subsequent agreements in 1929, a coordination agreement, supposed to link together the several contracts of 1929 into an imaginary world cartel for the oil and chemical industries.

Now to me the word cartel means a combination of competitors to control production and fix prices.

I have read Mr. Arnold's article in the Atlantic Monthly for July 1942, in which he explains his understanding of what he means by a cartel:

"It inevitably pursues a policy of high cost and low turn-over, because short-run profits are always more attractive to a cartel than the struggle for competitive efficiency which comes of full production."

Digitized by Google

Let me say right here that our relations with I. G. have never constituted a cartel under either of these definitions.

The 1927 declaration of good faith from its origin had no possible purpose or effect except to record the good intentions of the parties under a simple oil patent contract applying to the United States only. The Antitrust Division represented it to the world as a separate pact made to coordinate the 1929 agreements—a pact by which Standard Oil and I. G. were to override all laws in effecting their purposes in the chemical field. It was not until a week or so ago that Mr. Gibson, of the Antitrust Division, publicly acknowledged that the "coordination agreement" of 1929 had, in fact, originated with the discussions of the first simple United States oil patent agreement.

A memorandum, made by I. G. in 1927 and taken from their files by the Antitrust Division in 1941, reported a discussion in which one of the I. G. officials somewhat extravagantly characterized this simple 1927 United States oil patent agreement, then under negotiation, as a "full marriage" between the parties. This statement was quoted and erroneously applied to the 1929 agreements as further proof of an alliance to rule the oil and chemical industries of the world.

Now I want you to bear this in mind in everything that follows. That quotation "full marriage" and that simple letter of good faith which was inflated into a significant "coordination agreement," were two of the foundations upon which they rested their jerry-built house.

CONTRACT INADEQUACIES

Just because it was so limited in its scope, the 1927 agreement was found to involve difficulties for both parties.

It did not prevent controversies over foreign rights to inventions resulting from the cooperation of both research staffs. There was still left the prospect of jealousies and disagreements which would tend to defeat honest technical cooperation in improving processes which both parties intended to license to the whole oil industry.

Also, the field of coal hydrogenation had been left completely outside of the agreement, even in the United States—because I. G. had valued this process so highly that it was unwilling to put it into the arrangement.

Standard Oil and I. G. were thus left in the anomalous position of cooperating to develop the oil hydrogenation process, at the same time not cooperating with one another in applying the results of their cooperation to the hydrogenation of coal, where much of the same improved techniques were useful.

I. G. also complained that it would be highly unfair if Standard were to take advantage of the new training in catalytic chemistry it was receiving from I. G. to embark in the purely chemical field by promptly applying this catalytic knowledge, for example, to the manufacture of dyes.

While Standard was quite willing to disclaim any intention of departing from the oil busines to enter the strictly chemical field, we had some small investments and some large ambitions in branches of the chemical business closely related to oil.

There was a further source of friction. Growing out of Germany's difficulty in paying for imports from foreign countries was the nationalistic urge to create synthetic oil from German coal. Although this meant loss of markets for our American oil, there was nothing we could do about it. What we thought we could do something about, however, was to protect the larget investment we had built up in German over the last 40 years. I. G., in marketing its synthetic oil, was ambitious to build up a duplicate distribution system for this new product paralleling the entirely adequate distribution system which Standard owned in Germany for handling its own imported gasoline. We hoped to persuade them that this was unnecessary and unsound.

A NEW CONTRACT

In 1929 therefore an effort was made to solve these problems by substituting for the original simple United States patent agreement of 1927 some arrangement which would be fair and workable on all matters which experience had shown must be provided for. By this time the technical departments of I. G. and Standard had been cooperating for 2 years. We had gained a wholesome respect for the research ability of their organization. We knew that we were just beginning to bring into this country most valuable knowledge on what catalytic chemistry could do in opening up new horizons for our whole oil industry.

Digitized by Google

Remember, 1929 was the year that the German Reichstag ratified the Kellogg Peace Pact.

The main agreement of 1929 was a simple purchase. Standard bought, for the world outside of Germany, full control of, and an 80-percent financial interest in, all of I. G.'s oil and coal hydrogenation processes, as well as their other inventions on oil refining. The 20-percent financial interest left with I. G. was for the purpose of keeping them active and interested in helping Standard with research to improve the processes.

I. G. refused to sell any of their patent rights for Germany, but a working arrangement between the two companies was arrived at under which Standard could continue, and expand, its regular oil refining business there and, in addition, handle on a profitable basis, through its local distributing organization, products made by I. G. in Germany from coal hydrogenation.

This straightforward purchase, widely hailed at the time in American newspapers, is the thing that is falsely labeled a world cartel for oil.

To give added color to this cartel picture they went to the length of quoting, as apparently having some pertinence, a provision which they found in an agreement between I. G. and the Shering Corporation (a company with which we have never had any relations of any kind) as follows:

"The existence, the content and the details of this agreement have to be kept secret by both parties notwithstanding the possible obligation of disclosing it to public officials."

This agreement we have never heard of, and we have always been at a loss to understand why it could have been considered either just or pertinent to inject an unverified and unexplained quotation of this kind from somebody else's records into an alleged exposition of our contract relations and policies. We are quite sure the members of this committee will agree with us that such procedure violates the rules of fair play.

How anyone could apply the term "cartel" to this 1929 purchase of German inventions is beyond our understanding. Our own views and intentions can best be judged by what we did. Even before we signed the contract we started to arrange for the sale of the oil and coal hydrogenation processes to the American oil industry at large through an industry company organized to take control—leaving us with only a minority stock interest and a right to future royalties.

We passed into the hands of the oil industry the control of, and responsibility for, new hydrogenation techniques which but for our purchase would certainly have been used by the German owners for their sole benefit. We were not trying to organize any cartels or to limit or prevent competition in the oil industry in any way. We are only a fraction of the world's oil industry, but we know that our own security rests on the general health and prosperity of that industry as a whole.

SUPPLEMENTARY AGREEMENTS

Supplementing the main agreement which dealt principally with hydrogenation processes, there were two other agreements, one relating wholly to Germany and the other to chemical processes. The agreement relating to Germany covered the sale by Standard of the gasoline made from coal in Germany and contained option provisions under which I. G. was to get rights to purchase shares in Standard's German subsidiary. It has never been able to exercise these options.

The difficulties which we had found to exist between us in the chemical field have already been referred to. The solution of these difficulties was attempted in a separate agreement, the provisions of which were as follows:

Each party confirmed the understanding of the other that it did not intend to depart from its existing policies to enter the industrial field of the other. I. G. was simultaneously selling to Standard all of its oil refining patents, and would therefore be handicapped if it tried to enter the oil business outside of Germany. There was therefore all the more reason why it should ask us to stipulate that we did not intend to depart from our own line of business, take advantage of the education in catalytic chemistry received from I. G. and attempt to set ourselves up in the general chemical business.

While these expressions of policy and intent were made in good faith, there was no actual prohibition against either party buying control of, or starting a company competing with the other anywhere in the world. The actual effect on their future operations was only the effect resulting from the sale of new developments to each other. In Standard's case, this was an agreement to sell to I. G. control of any new chemical development not closely related to Standard's

Digitized by Google

then existing business. There was a corresponding agreement by I. G. to sell to Standard control of any new chemical development so closely related to the oil business that it could only be carried on effectively as a part of the oil business. This still left to be settled new chemical developments which would be related to the then existing business of Standard (as for example, by the use of natural gas or petroleum products as raw materials) but which were not so closely related to the oil business as to be incapable of growth as independent enterprises.

I. G. agreed to offer to Standard a substantial but not controlling participation in any such new developments originating with them. The terms upon which I. G. would actually offer such participation, and the extent of such participation, were left entirely open.

Standard itself assumed no corresponding obligation. We were therefore in the position of having obtained a broad general option for a minority participation in I. G. oil chemical processes—even though they could be developed entirely independently of the oil business—while still retaining our own control over our own oil chemical processes of a similar character.

Without knowing the details, we knew that I. G. had gone very far in the development of several important processes for the production of chemical products from oil raw material. We knew that they were about ready to commercialize manufacture of fertilizers from natural gas, that they had processes for making acetylene from refinery gas, that they could make some kind of synthetic rubber from this acetylene, and that they were also working on the production of soap from paraffin wax. We were well satisfied, therefore, that our option would be of some interest and value to us in the future. And remember, the only thing we gave for it was a promise that we would not do something we had not done for 50 years and had no intention of doing in the future; that was, to make a sudden jump completely outside of the oil business and start ourselves up in the general chemical business.

This agreement which I have just described to you is the Antitrust Division's imaginary chemical cartel. It is the foundation of the claim that we violated the antitrust laws of the United States. We were absolutely sure that the agreement was proper and constructive, that it would advance the interests of our Nation, the American oil industry, and our company. We were advised by the most competent counsel that it constituted no violation of the antitrust laws.

A COOPERATIVE RESEARCH COMPANY

As I told you, the 1929 agreements gave us a general option to acquire an interest in oil-chemical developments of I. G. But the general option necessarily left unstated the terms on which any particular interest in any particular invention would be offered. It was therefore "an agreement to agree" rather than a final contract.

Actually we did not know at that time exactly what oil-chemical developments I. G. had or how valuable they might be. After the 1929 agreement was signed they gave us more specific information both on what they were doing and on what they hoped to do in this field of converting oil raw material into chemical products—soap, acetylene, and rubber.

After a year of study and talk we made another step forward. We worked out the Joint American Study Co. agreement, which was, with slight variation, a method of implementing the general option which we had obtained in 1929. It was agreed that we would organize an American corporation, the Joint American Study Co., afterward abbreviated to Jasco, in which the two companies would be equal partners. This company was the vehicle through which there were to be developed and licensed the processes of making chemical products from oil raw material.

The arrangement had one extremely significant provision, however. This was that neither party was obligated to put into Jasco any development, no matter what its nature, in a business in which he was already engaged. The whole thing was therefore limited in its scope to brand-new developments not yet commercialized by either party. This relieved Standard of all obligations to I. G. on the only lines of oil-chemical work on which it had any existing assets or prospects—the manufacture of alcohols and similar chemical solvents from oil and the manufacture of antiknock compounds for gasoline. In 1929 we had invested in these oil-chemical fields about $3,000,000, and we expected this business to grow. It has grown. Our investments have increased from about $3,000,000 to about $30,000,000.

Digitized by Google

As a result of this provision, I. G. was obligated to put into the new joint company many processes not yet commercially used, but upon which it had spent great sums of money—such as the acetylene process, the soap process, and the buna rubber process. On the other hand, Standard had no countervailing asets to offer.

THE REAL EFFECT

This inequity was met by adhering to the 50–50 ownership, but adding the provision that the party originating any process should receive five-eighths of the financial return on that process, and the other party only a three-eighths interest. It was natural that the majority interest should have the deciding voice on development and licensing.

In the practical operation of Jasco, therefore, the parties adopted the natural rule that the one originating a particular process should also have control of it.

The Jasco arrangement had the effect, therefore, of giving to Standard a three-eighths interest in some new oil-chemical processes in return for simply putting up one-half of the money used in their commercial development, and the development itself was to be done in the United States.

Standard was then a novice in this field. It had its education still to get. It had at the time no processes to contribute and, as a matter of fact, never contributed any during the 10 years of this arrangement. But if it had ever had any such process to contribute it would have given up only a three-eighths interest and retained control.

BUTYL BELONGS TO AMERICA

Mr. Gibson told you that we would not have had control of butyl rubber, even though we would have had a five-eighths financial interest in it. He is entirely wrong. Butyl rubber has not been and connot be, made on a large scale except as part of an oil business, and therefore control automatically remained with us under the 1929 agreement. The 1930 agreement only confirmed this situation, since under it the parties soon adopted the sensible working rule that the originator should have control.

The butyl rubber process of course came within the terms of the Jasco arrangement and would have eventually come into Jasco if the war had not intervened. If so it would have been a partial offset to the buna and other processes which I. G. had put in. As a matter of fact, the war did intervene and the entire arrangement was recast into a geograpical division rather than a partnership of the parties throughout the world, so that I. G. never even acquired a minority interest in butyl rubber in the United States, where its principal value will certainly always lie.

SUMMARY OF CONTRACTS WITH I. G. F.

The net result therefore of the so-called chemical cartel created by the 1929 general option agreement and the 1930 agreement implementing this general option was that Standard acquired a minority interest in a group of oil-chemical processes which I. G. had developed and owned and would have continued to own exclusively except for this arrangement. Standard gave in return an agreement to sell to I. G. at a price to be determined at the time, control of chemical inventions entirely outside the oil industry, none of which inventions of any consequence Standard had made before or has made since. In addition we agreed to give a minority interest in Standard inventions in the oil-chemical field, outside of the lines in which Standard might be engaged at the time. Although Standard's oil-chemical business actually expanded tenfold between 1929 and 1941, this expansion was in fields outside of the I. G. contract, and the first process of Standard's within the scope of this alleged world chemical cartel was the butyl process, which will become a commercial reality in the United States for the first time this December, 3 years after the Jasco contract was completely revised to eliminate all interest of I. G. in the United States patents coming under the contract.

SYNTHETIC ACETIC ACID

Now let me take up specifically some of the statements of witnesses who have attacked us here before you.

Mr. Irving Lipkowitz, an economic expert in the Antitrust Division, took more than a day of the time of this committee painting a distorted picture of our op-

Digitized by Google

erations with acetic acid, acetylene, and acetaldehyde. His own summary of this story was this:

"During the early 1930's I. G. Farben of Germany held the United States patents on a new and promising process for making acetylene, the principal material used in the manufacture of synthetic acetic acid. By an adroit manipulation of these patents, and by a clever use of its partnership with Standard Oil of New Jersey, I. G. Farben succeeded in preventing the full development and utilization of that process."

As Mr. Lipkowitz says, I. G. owned the process and the patents on it granted to them by our Government. When we signed our contract with I. G. covering this process they became obligated to put up some money with us for experiments to see what could be done with it. Those experiments cost $1,500,000, half of which I. G. had to put up. Out of those experiments we hoped to find a missing link in the synthetic rubber chain (cheap acetaldehyde), and incidentally to recover the cost of the work by selling any acetic acid we produced.

Now, gentlemen, if I. G. had wanted to prevent the development and utilization of this process, all they had to do, obviously, was not to sign such a contract with us. It was the contract which started something—not stopped something. Let's put it in the simplest terms. I. G. owned a mining claim. They gave us a share of the claim on condition that we put up some money jointly with them to sink a shaft and see if we could get any ore out of the mine.

This the witness called a deep-dye plot of I. G. to stifle the production of ore.

I may add, gentlemen, that after spending $1,500,000 we found out that the mine was worthless. We were never able to produce either acetylene or acetic acid by these methods on a commercially attractive basis, although we often thought we were just on the point of doing so. Nor were we ever able to persuade anyone to buy a license for the process, although we peddled the process industriously in an effort to get our money back that way.

The experiments on this process were conducted in the United States over the period 1931 to 1935. When these experiments were started, we had at Baton Rouge, La., power costing approximately 2 mills per kilowatt-hour. We also had a special cut of refinery gas from which the acetylene could be made with less power requirements than from any other cut. However, by 1935 our cost of available power at Baton Rouge had increased to about 4 mills per kilowatt-hour and shortly thereafter we were using the special cut of refinery gas for making another chemical product, ethyl chloride, needed in our business. As a result of these two factors, the cost of power for this process for producing acetylene from refinery gas was increased by about 120 percent. This was primarily an electrical process so that the cost of power was a controlling factor. Without cheap power and cheap gas it offered no attraction for us or anyone else.

So far as we are concerned, the most important outcome of the whole thing is that we satisfied ourselves that this process, which was the original I. G. scheme for making rubber from oil, was not going to work in the United States.

You gentlemen know the patent laws of this country. If the inventor wants to he can sit still for 17 years with his patent and not use it himself or let anyone else use it. You have often considered whether this phase of the law should be amended, and so far you have always decided that it shouldn't. Our contract forced I. G. to do something with a patent which they could otherwise have continued to let rest in peace. Since they had owned the patent in the first place, they still retained the deciding voice on just what was to be done with it, but after they signed up with us they had to do something, and in all fairness to them, they did—they spent their half of $1,500,000 and they taught us a lot of things.

The witness also drew the fanciful conclusion that we started to tear down the pilot plant used in this work on orders from Germany when Germany went to war in September 1939. The fact of the matter is that by the end of 1937 we had virtually abandoned experimenting in the production of acetylene and acetic acid and beginning in 1936 parts of the pilot plant were taken for use in the ethyl chloride plant, since that was a more promising experiment. In May of 1939 our own people at the Baton Rouge plant suggested that instead of spending more money for maintenance we should dismantle the plant and salvage whatever we could. Acting upon our own suggestion, several months before Germany went to war, steps were taken to carry out this decision by listing all equipment for sale or transfer and arranging to dismantle the outside structures which could not be used for any other purpose.

Thus there is no support in fact for the long and fanciful tale of the witness in respect to the acetylene and acetic acid venture.

Digitized by Google

PARAFLOW

Mr. John R. Jacobs, also a special attorney in the Antitrust Division, took a day of your time to present to you his picture of the injury to American interests which he says resulted from our handling of two inventions—called Paraflow and methane steam.

That witness summarized his testimony as follows:

"My testimony before this committee will be limited to a discussion of a product called paraflow and the methane steam process, both of which were directly affected by the cartel arrangement of 1929 between Standard Oil of New Jersey and the I. G. Farbenindustrie of Germany. The formation of this cartel between these two industrial empires operated, as to paraflow, to create a complete monopoly and give to I. G. royalties which should have gone to American industry. As to the methane steam process, the effect was to restrain its use and thus to prevent our strategic explosives industry from obtaining necessary licenses under the patents to increase our war production."

Let me dispose of that, also, in a few words.

A CHEMICAL CURIOSITY

I. G. had discovered how to make a very expensive synthetic lubricating oil which was to them only a curiosity and for which they had no practical use. One of our chemists, who had been searching for years for something to put into the highest grade Pennsylvania automobile oils to keep them from freezing in cold weather, picked up a laboratory sample of this German chemical curiosity on a visit to their laboratories, brought the formula home, and found it was exactly what he was seeking. He patented the process for freeze-proofing Pennsylvania type oils by adding a small quantity of product of the chemical nature of this German synthetic oil. But the only way we could make any such product practically was to get a license from the Germans to manufacture their chemical curiosity in America. We were entitled to do this under our 1929 agreements, but we had to pay a small supplementary amount to I. G.—as provided for in the same agreement.

The actual amount paid them was 3½ percent of the profits of the business. This is the basis for the witness' statement that we "gave to I. G. royalties that should have gone to American industry."

The entire paraflow business, which turned out to be a profitable one and some consolation to us for our share of the $1,500,000 we had just dropped in the "worthless mine" I told you about, could never have been started if the I. G. organic chemists had not discovered this chemical curiosity and handed us a sample to play with.

Now as to the monopoly business. We never had any monopoly on paraflow except the 17-year monopoly the patents gave us, and that is what Government patents are for. Other companies started manufacturing freeze-proofed oils that infringed our patents or conflicted with our pending applications. In order to avoid extended controversy and litigation over patents with respect to these conflicts, we settled the controversies by acquiring the conflicting rights or granting limited licenses under our patents, in each case without interfering with the use by the other parties of their products in the sale of their oils.

The truth of the matter is that no one has yet succeeded in getting up a competing product which does not depend on our patents and which is of good enough quality to take any large amount of the paraflow business.

Whatever monopoly we have enjoyed has been due to the merits of the invention and of the product.

Trade statistics show that there has been a reduction in wholesale price in these freeze-proof oils of about 2½ cents a gallon, which has resulted from the general use of paraflow in place of the more costly methods previously used to make an oil of inferior all-around quality. We have been fortunate enough to make a profit out of this invention. The public has gotten better automobile oils at lower prices.

METHANE STEAM PROCESS

In their study of the manufacture of synthetic ammonia, which is one of their main lines of business, the I. G. had invented a process for producing hydrogen from methane and steam. This also seemed to be the best process for getting the hydrogen needed for oil hydrogenation. So when we bought the hydrogenation rights we took the rights to this methane steam process, but only for hydro-

Digitized by Google

genation, not for synthetic ammonia. We have never been in the synthetic ammonia business, but we developed the methane steam process here in America on a large scale in connection with our oil hydrogenation. We improved on it and got som patents of our own on the improvements. We gave our designs to several large refiners and some of the best engineering contractors—always with the understanding that the rights we gave them under any patents of I. G. were limited entirely to hydrogenation of oil and coal.

When the national defense program had gotten under way here there was need for new synthetic ammonia plants. Some of the contractors who were negotiating for these new ammonia plants wanted to use the methane steam plant designs which they had gotten from us for use in oil hydrogenation. Germany was, of course, already at war. Efforts by the contractors and by us to get any action out of the I. G. in Germany on patent licenses for these synthetic ammonia plants proved fruitless. We therefore took it upon ourselves to see that the Government was advised, knowing that they had full power to cut this legal Gordian knot—the only thing that stood in the way of using the underlying German inventions for producing the hydrogen for synthetic ammonia.

CUTTING THE GORDIAN KNOT

Our procedure was to write the engineering contractors, explaining exactly what the situation was, then take the letters down to Washington and review the problem with the Office of Production Management, the war agency handling the matter. Our files show that this conference took place on August 25, 1941, with Dr. Reed, head of the Chemical Division, and Mr. Eaton, Associate General Counsel of Office of Production Management. The Office of Production Management Officials took all necessary action to deal with this matter. Since it is of interest I will pass on to you statements, which I believe to be reliable, that six large ammonia plants, built under Government sponsorship and making about one-half of all the emergency ammonia to be produced in connection with the war effort, are using this process. The engineers estimate the savings of money and proportionate savings of steel and other critical materials from the use of this process to be somewhere between twenty and forty million dollars as compared with the next best process. I should explain to you that the ammonia made for war purposes goes into explosives.

The witness's summary of the methane steam matter was: "As to the methane steam process, the effect (of our contracts with I. G.) was to restrain its use and thus to prevent our strategic explosives industry from obtaining necessary licenses under the patents to increase our war production."

On the contrary, the effect was to give to this country, in advance of the war, all the knowledge and plant designs necessary to go ahead with the best process for synthetic ammonia whenever the need arose, so that by a simple act of a war agency al lof the patent complications, assumed by the witness to have been sufficient to hamstring the United States Government, were swept away.

SYNTHETIC RUBBER

On May 20, 21, and 22, 1942, Mr. Robert M. Hunter, a Special Assistant to the Attorney General, presented to your committee his interpretation of 230 documents having to do with synthetic rubber. When these 230 documents are considered on their own merits, apart from the interpretation of the witness, they show a record of which we are proud.

That witness, in introducing himself to you, confessed that his knowledge of these matters had come almost exclusively from such files of the Standard Oil Co. as he had been able to examine and that he might "have distorted the picture of some matters widely as a result of the limited horizon" he had. He admitted also that he "had no chemical background," and that he did not "hold himself out as an expert on synthetic rubber, either as to the chemistry of it or any other phase of it."

The synthetic-rubber problem is inherently one of the most complicated chemical and industrial problems this country has ever had to face. Many competent men have given the Congress and the public honest and correct appraisals of the difficulties that had to be met but in my opinion these difficulties have been enormously aggravated by the widely publicized statements of a number of fake experts and notoriety seekers who didn't know what they were talking about. Unfortunately, most of them have lacked the frankness of Mr. Hunter in ad-

Digitized by Google

mitting their inadequacies. The fact remains, however, that the American public has been confused by what they have said.

I shall try to tell you the plain facts about this matter so far as our company is concerned in terms of plain common sense and without technical detail.

ORIGIN OF BUNA

The German I. G. developed a product called Buna rubber, which they made from coal. Under our 1929 and 1930 agreement we were entitled to a three-eighths interest in Buna rubber outside Germany, but only to the extent that it was made from oil or natural gas. The German Government subsidized the work in Germany on producing buna from coal, beginning sometime around 1935 or 1936, and at the outbreak of the war in September 1939 they had just gotten into operation their first large-scale commercial plant of 25,000 tons capacity, which was probably about one-tenth of their war requirements.

There was at that time no commercial production of buna rubber in the United States, but there had been nearly 10 years of study of the problem of producing buna from oil by us here and we had had considerable help from the I. G. The bottleneck was how to get butadiene cheaply enough and in large quantities. I told you that our company and I. G. spent a million and a half dollars between 1931 and 1935 on a process which was supposed to provide the missing link but which turned out to be much too expensive.

Both I. G. and Standard had tried out several other methods of producing butadiene from oil on a small scale and we knew they would work. We also knew that buna rubber itself had been developed into a fairly good product—good enough to be reliable as a tire rubber in case of necessity. There was also a good prospect for a small commercial business making special high-cost grades of buna rubber for special purposes. At the end of 1938 I. G. and Standard were conducting initial conversations with the leading rubber companies in the United States on the merits of the buna rubber process and product.

FIRST AMERICAN BUNA TIRES

During 1939—at the very time when Hitler must have had his war all planned—five leading rubber companies in this country were running tests on buna rubber tires, using product which I. G. had supplied them at our request. Actual manufacture of the tires was carried out with the help of an expert sent from I. G. for the purpose.

At the time the war broke out in Europe what was wrong with this picture? Only one thing—that is, the process still belonged to the Germans, and we had only a minority interest.

Our solution of this situation was to eliminate I. G.'s interest in the buna process in the United States completely. We proceeded at once. Before the end of September 1939, an agreement had been worked out under which we were to take over all of the rights in the buna rubber process for the United States and the British and French Empires, and give up all our rights for the rest of the world. Within 1 month after Europe went to war, and more than 2 years before America went to war, we had eliminated all foreign interest in this process and were free to do with it whatever seemed necessary.

In 1939 almost everybody in this country, including our national leaders, hoped and believed that we could keep from being drawn into war with anyone. But if we had been gifted with foresight, if we had known that we would be at war with Germany in 1942, we could have taken no wiser step.

MUNITIONS BOARD GETS DATA

What did we do with buna rubber when we had eliminated foreign control? We did three things: First, we reported the situation to the Army and Navy Munitions Board in November 1939 and asked for advice. From that time to this we have been constantly in contact with all appropriate agencies of our Government and followed the advice they gave us. The first advice given to us by the Army and Navy Munitions Board was to try to interest the rubber companies in some sort of common effort to develop buna rubber in the United States, in the belief that such concerted effort would afford the best foundation for the necessary Government assistance in developing the new industry as a safeguard in case of emergency. We made plans to pool our interests with

Digitized by Google

the rubber companies as suggested by the Army and Navy Munitions Board, but the plans were not approved by legal counsel.

The second thing we did was to begin at once our own plans for buna rubber production in the United States. We had the advantage of a 10-year background of study of butadiene production, which was the real problem. Actual production of the rubber was relatively simple. By the time America went into the war we were in commercial production of buna rubber and had nearly finished our first oil butadiene plant, which was designed for about 10 tons a day. This gave us a production which exceeded our ability to sell the product at that time.

The third thing we did was to offer licenses to all the rubber companies we thought would be interested in producing buna rubber. Two out of the four largest companies, Firestone and United States Rubber Co., accepted these licenses promptly, and Firestone began commercial production. The other two companies who were interested in synthetic rubber, Goodyear and Goodrich, preferred to continue to develop their own processes, which though very similar to the buna process, were not, in their opinion, under the buna patents.

In the 2½ years prior to Pearl Harbor, our company submitted on 46 occasions samples of various synthetic rubbers to 7 different Government agencies or their appointed representatives.

It was not until the middle of 1941 that the Government itself undertook to do anything definite about buna rubber production. We gave Government agencies all possible assistance and never suggested that our company should have any preferential position in the Government's manufacturing program.

PEARL HARBOR

With the outbreak of war in the Pacific, the Government acted promptly to greatly expand its rubber program. To expedite this, it wanted to get a complete pool of all patents and all information which anyone had on buna rubber. The pool was formed within 2 weeks after Pearl Harbor. We threw in all of our improvement patents, as did other parties, without royalty. A royalty of 1 percent was allowed us for the basic patents for the period of the emergency, rising to 2 percent after the emergency. Again there was no question of preference of any kind to our company in the actual manufacture of the rubber or in any of the raw materials for it.

As you all know, the buna rubber program is the foundation of the entire synthetic rubber program of the Government. They expect to make, as far as we know now, 700,000 tons a year of buna rubber. In this program we agreed to supply 7,000 tons of butadiene from a plant that we already had under construction, financed with our own money, before Pearl Harbor, and 45,000 tons from two plants we are building for the Government. We offered to make raw materials. At one time, impatient for quick action from other companies, the Government asked us to assume larger commitments for butadiene. This we were willing to do, but these additional commitments were very soon undertaken by others.

While we ourselves are making only a small percentage of butadiene for the Government's program and absolutely none of the buna rubber itself in this program, plant designs and detailed processes for buna rubber and for butadiene manufacture based on our engineering are being used widely throughout the rubber and oil industries under the information and patent pools which the Government initiated with the approval of the Attorney General.

BUTYL RUBBER

To complete the rubber picture I want to comment only on one more thing—butyl rubber. Our chemists first hit on this product in 1937 as an outgrowth of their work on a somewhat similar product, vistanex, a rubberlike substance which we had obtained from I. G. In 1937 and 1938 we filed patent applications for this butyl rubber in the United States and many other countries and at the same time reported it to I. G. as a development which would come under our contracts. We did not think at the time, and we have never had any reason to think since, that butyl rubber would ever be of interest or importance in Germany except as a specialty product.

The butyl development was never a secret process, although of course the latest improvements are kept secret under Government order since the war. We had applied for patents throughout the world. And these patents, which

Digitized by Google

would have given all the essentials to I. G. or anyone else, were actually published in 1938.

Although we have spent money freely on butyl rubber development, neither the product nor the process was sufficiently advanced at the time of Pearl Harbor to be relied upon for anything more than a small proportion of the Government's rubber program. We were asked to produce annually a total of 60,000 tons of butyl rubber out of 800,000 tons total synthetic rubber production provided for.

CAPACITY INCREASED

There has been, however, continuous improvement both in the quality of butyl rubber and its manufacturing process. A few weeks ago we were able to announce that War Production Board had authorized us to change our plant designs to incorporate latest improvements which will result in raising the capacity of the butyl plants from 60,000 to 132,000 tons per annum without additional critical construction materials and with a saving in the cost of the product. We announced last March that we were entirely ready to license anyone to produce butyl rubber royalty-free for the period of the war, and at reasonable royalty rates after the war.

The witness said that there were only three technical men working on butyl rubber in May 1941. That number was mentioned in a Standard report as the number of those working on a particular phase of butyl. Our records show that throughout the year 1941 there were an average of 80.5 men working on butyl daily. If the witness had been a technically trained man he would have known that all the reports he read of May 1941 butyl work could not have come from only three men.

There has been a further recent development in butyl rubber which we call flexon. This will be made by many other people. Flexon is a somewhat inferior grade of butyl rubber which can be made with makeshift facilities, using dry ice as a refrigerant. It is hoped that a substantial quantity of this flexon can be produced in small plants at widely scattered points throughout the United States within a few months, thus tiding over the situation until the regular Government rubber program is in full operation late next year. Although we are necessarily pioneering the production of flexon, it is at present contemplated that we will make only a small proportion of the total output.

I have taken considerable time to review the history of our research relationship with I. G. and, in as few words as possible, to dispose of misrepresentations of our operations that have been made here. I would like to have leave from your committee to file an extension of my testimony when the whole record has been made available to us, in case it seems desirable to do so.

CONSENT DECREE

I have said that in the case of these 1929 contracts with I. G., we consulted the best legal opinion available. Opinion was unanimous that the contracts in no way violated antitrust laws.

Twelve years later the Antitrust Division took the position that some of those contracts did violate the antitrust law as it is now interpreted. They advised us that unless we were prepared to accept their views they would immediately file suit against us.

This country was then at war. Rather than enter upon a long legal contest with an arm of the Government in wartime, we decided to go without further argument the way the Antitrust Division wanted us to go. We signed a consent decree on March 25 of this year. In that consent decree we did not admit, nor were we asked to admit, that we had violated the antitrust law. We simply agreed that in the future we would, in respect of these contracts, follow the interpretations now being given by the Antitrust Division to this country's antitrust law.

Our idea in signing the consent decree was to have done with the matter. Apparently we were mistaken.

Like all other American businessmen, our primary concern right now is meeting the demand of war agencies for the production of miracles—demand for more and more production of better and better war weapons out of less and less plant equipment.

To save time, material, and lost motion in the production of war materials, the war agencies of our Government are urging the most complete technical cooperation on the part of industry. In buna rubber our company is in a pool

Digitized by Google

with the leading rubber companies; in butadiene manufacture we are in a pool of four chemical and four oil companies; in styrene manufacture we are in a pool of four chemical and two oil companies; in alkylation process for 100-octane gasoline we are in a pool of six companies; in catalytic cracking and in toluene production pools are just now being set up in more effective form through consultation with war agencies.

In conclusion, may I say this, Senator:

Since the days of the first Yankee clippers Americans have roamed the four corners of the earth, bringing back to this great country of ours new products, new materials, new ideas which American ingenuity has used to improve the standard of living of our people. We employees of the Standard Oil Co. are proud to be a part of that American tradition.

The question has been raised here as to whether American scientists have been less capable than German scientists. I do not want to leave that thought in the record. American scientists and technical men have proved that they are as smart as those of any country on the face of this globe. They were, in fact, smart enough, when the need arose in 1927, to take advantage of important contributions to science already made instead of wasting time by starting from scratch.

We, as a company, are proud of the wealth of technical knowledge we have brought into this country, and we are proud of what we have been able to do with this knowledge once we get it here. The whole American public has benefited in the many ways we have tried to show you here during the past 3 days.

We of the Standard Oil Co. are happy and proud that events have enabled us to make our country stronger and better equipped when our Nation needs the very best that every one of us has to give.

All of us have come down here because we felt that during these hearings our reputations, our motives, our integrity had been questioned. Others have read into cold legal documents motives which were not there. We have tried to tell you at first hand what our motives were. We have tried to show what we did for America with what we got from Germany, because what we intended to do can best be judged by the record of what we did.

I hope that we have set the record straight in your minds. We certainly have done our best to do so.

But there are more important considerations today even than the reputation of Standard Oil Co., no matter how important that may be to those of us who make up the company.

The only really important thing today is to win this war, and to win it in the quickest possible time. That is going to take every resource of all of us working together.

Hitler's slogan is "Divide and Conquer." To promote lack of harmony among his enemies is Hitler's game.

I do not want to leave this room without saying that our ambition is to work with you and with all other Americans to win this war. If you can show us how we can change what we are doing to help bring that about, we want your help. This war has not gone well for us to date. But united, we can win. United we will win. We of the Standard Oil Co. are 50,000 Americans. We are determined, as are you, to preserve for our children and our children's children those four freedoms which are dearer than life to all of us—the freedom of speech, the freedom of religious liberty, the freedom from want, the freedom from fear.

EXHIBIT 142

COMPARISON OF CERTAIN SENATE BILLS RELATING TO PATENTS

(1) S. 2491, Seventy-seventh Congress, second session, a bill to amend the patent laws, to prevent suppression of inventions, to promote the progress of science and the useful arts, and for other purposes. This bill, as well as S. 2303, discussed below, were the subject of extensive hearings before the Senate Committee on Patents in 1942. S. 2491 contains provisions which would have carried out a number of the proposals made in the final report and recommendations of the

Digitized by Google

Temporary National Economic Committee (S. Doc. No. 35, 77th Cong., 1st sess., pp. 36 and 37). The recommendations dealt with in the bill are as follows:

"(a) Licensing of patents: In order to eliminate the use of patents in ways inimical to the public policy inherent in the patent laws, as well as that of the antitrust laws, we recommend that the Congress enact legislation which will require that any future patent is to be available for use by anone who may desire its use and who is willing to pay a fair price for the privilege. Machinery, either judicial or administrative, should be set up to determine whether the royalty demanded by the patentee may fairly be said to represent reasonable compensation or is intended to set a prohibitive price for such use.

"This proposal is intended to prevent the suppression of patents as well as to provide for their availability for use in an equitable manner in any industry where they are a major factor."

[Approved. Dissenting: Sumners and Taylor.]

"(b) Unrestricted licenses: We recommend that the owner of any patent be required to grant only unrestricted licenses, and that he not be permitted to impose restrictions upon the buyer in sales of patented articles. In other words, the holder of a patent should not be permitted to restrict a licensee in respect of the amount of any article he may produce, the price at which he may sell, the purpose for which or the manner in which he may use the patent or any article produced thereunder, or the geographical area within which he may produce or sell such article. There should be a further prohibition against any other restriction which would tend substantially to lessen competition or to create a monopoly, unless such restriction is necessary to promote the progress of science and the useful arts."

[Approved without objection.]

"(c) Recording of transfers and agreements: We recommend that any sale, license, assignment, or other disposition of any patent be evidenced by an instrument in writing and that the same be required of any condition, agreement, or understanding relating to any sale or disposition of any such patent, and that in any such case a copy of such written instrument be filed with the Federal Trade Commission within 30 days after execution. There should, of course, be a substantial monetary penalty for failure to file as required."

[Approved without objection.]

* * * * * *

"(e) Forfeiture of patent for violation: If any person who owns any interest in or right under a patent violates any of the prohibitions described in paragraphs (a) and (b) above, his interest therein should be forfeited, such forfeiture to be brought about in a civil action against such person by the United States. Any patent or interest therein so forfeited should become a part of the public domain."

[Approved. Dissenting: Taylor.]

(2) S. 2303, Seventy-seventh Congress, second session, a bill to provide for the use of patents in the interest of national defense or the prosecution of war, and for other purposes. S. 2303 proposed to vest power during any war in the President to grant to any person a license to manufacture, use, or sell under any patent when such license would be in the interest of national defense or prosecution of war. Reasonable royalties, determined in accordance with regulations promulgated by the President, were to be paid under licenses so issued. The term of such license was also to be determined by the President. S. 2303 further proposed during time of war or declared emergency to vest in the President the power to acquire by purchase, donation, taking, or otherwise, patent rights where acquisition would be in the interest of national defense. Upon acquisition by taking, the owner of the patent rights was authorized to see compensation in the Court of Claims. The purpose of this bill has in part been met by the enactment of Public Law 768, Seventy-seventh Congress, an act to provide for adjusting royalties for the use of inventions for the benefit of the United States, in aid of the prosecution of the war, and for other purposes, which provides for the scaling down of excessive royalty charges to Government suppliers.

(3) S. 928, Seventy-seventh Congress, first session, a bill to establish a Circuit Court of Appeals for Patents. This bill was directed toward revision of the judicial machinery for adjudicating patent rights. Among other things, it deals with the problems arising from diversity of jurisdiction among United States courts over patent suits and the situation created by patents having a different

Digitized by Google

status in different circuits. The creation of such courts was recommended in the final report of the Temporary National Economic Committee, which stated (p. 37):

"(f) Single Court of Patent Appeals: In order to improve the existing mechanism for the issuance of patents and the determination of disputes relating thereto, we recommend the creation of a single Court of Patent Appeals with jurisdiction coextensive with the United States and its territories. Such a court would replace the present 11 different and independent jurisdictions and should do much to assure uniform treatment of patents and to reduce the time and cost of patent litigation."

(4) S. 4410, Seventy-sixth Congress, third session, a bill to protect the United States in respect of inventions usable for or against the national defense, and to protect against disclosures detrimental to the public interest of matters relating to the national defense. The purpose of this bill has been in part carried out by amendments to the patent laws providing for the issuance of secrecy orders for patents in connection with the promotion of the war effort.

S. 702, Seventy-eighth Congress, second session, introduced by Senator Kilgore, on February 11, 1943, is directed primarily toward the establishment of a unified administration to coordinate the development and utilization of the Nation's scientific and technical resources in furtherance of the war effort and the national welfare.

The Kilgore bill and the bills referred to by Senator Bone in his testimony would complement each other. Those referred to by Senator Bone deal with substantive problems in our patent system or with the judicial administration of patents, while the Kilgore bill relates to administration in promoting and developing research and the utilization of available or new techniques. The basic objectives of all these bills might be said to be the same, although each approaches the problem with different emphasis.

There might be minor features of various bills that should be clarified in connection with their possible interrelationship, but such clarification must await the final form of the various bills and will depend on the order in which legislation dealing with different phases of the patent system and the mobilization of scientific and technical resources, are enacted.

Digitized by Google

Digitized by Google

status in different circuits. The creation of such courts was recommended in the final report of the Temporary National Economic Committee, which stated (p. 37):

"(f) Single Court of Patent Appeals: In order to improve the existing mechanism for the issuance of patents and the determination of disputes relating thereto, we recommend the creation of a single Court of Patent Appeals with jurisdiction coextensive with the United States and its territories. Such a court would replace the present 11 different and independent jurisdictions and should do much to assure uniform treatment of patents and to reduce the time and cost of patent litigation."

(4) S. 4410, Seventy-sixth Congress, third session, a bill to protect the United States in respect of inventions usable for or against the national defense, and to protect against disclosures detrimental to the public interest of matters relating to the national defense. The purpose of this bill has been in part carried out by amendments to the patent laws providing for the issuance of secrecy orders for patents in connection with the promotion of the war effort.

S. 702, Seventy-eighth Congress, second session, introduced by Senator Kilgore, on February 11, 1943, is directed primarily toward the establishment of a unified administration to coordinate the development and utilization of the Nation's scientific and technical resources in furtherance of the war effort and the national welfare.

The Kilgore bill and the bills referred to by Senator Bone in his testimony would complement each other. Those referred to by Senator Bone deal with substantive problems in our patent system or with the judicial administration of patents, while the Kilgore bill relates to administration in promoting and developing research and the utilization of available or new techniques. The basic objectives of all these bills might be said to be the same, although each approaches the problem with different emphasis.

There might be minor features of various bills that should be clarified in connection with their possible interrelationship, but such clarification must await final form of the various bills and will depend on the order in which legislation dealing with different phases of the patent system and the mobilization of scientific and technical resources, are enacted.

Digitized by Google

Digitized by Google

Let me say right here that our relations with I. G. have never constituted a cartel under either of these definitions.

The 1927 declaration of good faith from its origin had no possible purpose or effect except to record the good intentions of the parties under a simple oil patent contract applying to the United States only. The Antitrust Division represented it to the world as a separate pact made to coordinate the 1929 agreements—a pact by which Standard Oil and I. G. were to override all laws in effecting their purposes in the chemical field. It was not until a week or so ago that Mr. Gibson, of the Antitrust Division, publicly acknowledged that the "coordination agreement" of 1929 had, in fact, originated with the discussions of the first simple United States oil patent agreement.

A memorandum, made by I. G. in 1927 and taken from their files by the Antitrust Division in 1941, reported a discussion in which one of the I. G. officials somewhat extravagantly characterized this simple 1927 United States oil patent agreement, then under negotiation, as a "full marriage" between the parties. This statement was quoted and erroneously applied to the 1929 agreements as further proof of an alliance to rule the oil and chemical industries of the world.

Now I want you to bear this in mind in everything that follows. That quotation "full marriage" and that simple letter of good faith which was inflated into a significant "coordination agreement," were two of the foundations upon which they rested their jerry-built house.

CONTRACT INADEQUACIES

Just because it was so limited in its scope, the 1927 agreement was found to involve difficulties for both parties.

It did not prevent controversies over foreign rights to inventions resulting from the cooperation of both research staffs. There was still left the prospect of jealousies and disagreements which would tend to defeat honest technical cooperation in improving processes which both parties intended to license to the whole oil industry.

Also, the field of coal hydrogenation had been left completely outside of the agreement, even in the United States—because I. G. had valued this process so highly that it was unwilling to put it into the arrangement.

Standard Oil and I. G. were thus left in the anomalous position of cooperating to develop the oil hydrogenation process, at the same time not cooperating with one another in applying the results of their cooperation to the hydrogenation of coal, where much of the same improved techniques were useful.

I. G. also complained that it would be highly unfair if Standard were to take advantage of the new training in catalytic chemistry it was receiving from I. G. to embark in the purely chemical field by promptly applying this catalytic knowledge, for example, to the manufacture of dyes.

While Standard was quite willing to disclaim any intention of departing from the oil busines to enter the strictly chemical field, we had some small investments and some large ambitions in branches of the chemical business closely related to oil.

There was a further source of friction. Growing out of Germany's difficulty in paying for imports from foreign countries was the nationalistic urge to create synthetic oil from German coal. Although this meant loss of markets for our American oil, there was nothing we could do about it. What we thought we could do something about, however, was to protect the larget investment we had built up in German over the last 40 years. I. G., in marketing its synthetic oil, was ambitious to build up a duplicate distribution system for this new product paralleling the entirely adequate distribution system which Standard owned in Germany for handling its own imported gasoline. We hoped to persuade them that this was unnecessary and unsound.

A NEW CONTRACT

In 1929 therefore an effort was made to solve these problems by substituting for the original simple United States patent agreement of 1927 some arrangement which would be fair and workable on all matters which experience had shown must be provided for. By this time the technical departments of I. G. and Standard had been cooperating for 2 years. We had gained a wholesome respect for the research ability of their organization. We knew that we were just beginning to bring into this country most valuable knowledge on what catalytic chemistry could do in opening up new horizons for our whole oil industry.

Digitized by Google

Remember, 1929 was the year that the German Reichstag ratified the Kellogg Peace Pact.

The main agreement of 1929 was a simple purchase. Standard bought, for the world outside of Germany, full control of, and an 80-percent financial interest in, all of I. G.'s oil and coal hydrogenation processes, as well as their other inventions on oil refining. The 20-percent financial interest left with I. G. was for the purpose of keeping them active and interested in helping Standard with research to improve the processes.

I. G. refused to sell any of their patent rights for Germany, but a working arrangement between the two companies was arrived at under which Standard could continue, and expand, its regular oil refining business there and, in addition, handle on a profitable basis, through its local distributing organization, products made by I. G. in Germany from coal hydrogenation.

This straightforward purchase, widely hailed at the time in American newspapers, is the thing that is falsely labeled a world cartel for oil.

To give added color to this cartel picture they went to the length of quoting, as apparently having some pertinence, a provision which they found in an agreement between I. G. and the Shering Corporation (a company with which we have never had any relations of any kind) as follows:

"The existence, the content and the details of this agreement have to be kept secret by both parties notwithstanding the possible obligation of disclosing it to public officials."

This agreement we have never heard of, and we have always been at a loss to understand why it could have been considered either just or pertinent to inject an unverified and unexplained quotation of this kind from somebody else's records into an alleged exposition of our contract relations and policies. We are quite sure the members of this committee will agree with us that such procedure violates the rules of fair play.

How anyone could apply the term "cartel" to this 1929 purchase of German inventions is beyond our understanding. Our own views and intentions can best be judged by what we did. Even before we signed the contract we started to arrange for the sale of the oil and coal hydrogenation processes to the American oil industry at large through an industry company organized to take control—leaving us with only a minority stock interest and a right to future royalties.

We passed into the hands of the oil industry the control of, and responsibility for, new hydrogenation techniques which but for our purchase would certainly have been used by the German owners for their sole benefit. We were not trying to organize any cartels or to limit or prevent competition in the oil industry in any way. We are only a fraction of the world's oil industry, but we know that our own security rests on the general health and prosperity of that industry as a whole.

SUPPLEMENTARY AGREEMENTS

Supplementing the main agreement which dealt principally with hydrogenation processes, there were two other agreements, one relating wholly to Germany and the other to chemical processes. The agreement relating to Germany covered the sale by Standard of the gasoline made from coal in Germany and contained option provisions under which I. G. was to get rights to purchase shares in Standard's German subsidiary. It has never been able to exercise these options.

The difficulties which we had found to exist between us in the chemical field have already been referred to. The solution of these difficulties was attempted in a separate agreement, the provisions of which were as follows:

Each party confirmed the understanding of the other that it did not intend to depart from its existing policies to enter the industrial field of the other. I. G. was simultaneously selling to Standard all of its oil refining patents, and would therefore be handicapped if it tried to enter the oil business outside of Germany. There was therefore all the more reason why it should ask us to stipulate that we did not intend to depart from our own line of business, take advantage of the education in catalytic chemistry received from I. G. and attempt to set ourselves up in the general chemical business.

While these expressions of policy and intent were made in good faith, there was no actual prohibition against either party buying control of, or starting a company competing with the other anywhere in the world. The actual effect on their future operations was only the effect resulting from the sale of new developments to each other. In Standard's case, this was an agreement to sell to I. G. control of any new chemical development not closely related to Standard's

Digitized by Google

then existing business. There was a corresponding agreement by I. G. to sell to Standard control of any new chemical development so closely related to the oil business that it could only be carried on effectively as a part of the oil business. This still left to be settled new chemical developments which would be related to the then existing business of Standard (as for example, by the use of natural gas or petroleum products as raw materials) but which were not so closely related to the oil business as to be incapable of growth as independent enterprises.

I. G. agreed to offer to Standard a substantial but not controlling participation in any such new developments originating with them. The terms upon which I. G. would actually offer such participation, and the extent of such participation, were left entirely open.

Standard itself assumed no corresponding obligation. We were therefore in the position of having obtained a broad general option for a minority participation in I. G. oil chemical processes—even though they could be developed entirely independently of the oil business—while still retaining our own control over our own oil chemical processes of a similar character.

Without knowing the details, we knew that I. G. had gone very far in the development of several important processes for the production of chemical products from oil raw material. We knew that they were about ready to commercialize manufacture of fertilizers from natural gas, that they had processes for making acetylene from refinery gas, that they could make some kind of synthetic rubber from this acetylene, and that they were also working on the production of soap from paraffin wax. We were well satisfied, therefore, that our option would be of some interest and value to us in the future. And remember, the only thing we gave for it was a promise that we would not do something we had not done for 50 years and had no intention of doing in the future; that was, to make a sudden jump completely outside of the oil business and start ourselves up in the general chemical business.

This agreement which I have just described to you is the Antitrust Division's imaginary chemical cartel. It is the foundation of the claim that we violated the antitrust laws of the United States. We were absolutely sure that the agreement was proper and constructive, that it would advance the interests of our Nation, the American oil industry, and our company. We were advised by the most competent counsel that it constituted no violation of the antitrust laws.

A COOPERATIVE RESEARCH COMPANY

As I told you, the 1929 agreements gave us a general option to acquire an interest in oil-chemical developments of I. G. But the general option necessarily left unstated the terms on which any particular interest in any particular invention would be offered. It was therefore "an agreement to agree" rather than a final contract.

Actually we did not know at that time exactly what oil-chemical developments I. G. had or how valuable they might be. After the 1929 agreement was signed they gave us more specific information both on what they were doing and on what they hoped to do in this field of converting oil raw material into chemical products—soap, acetylene, and rubber.

After a year of study and talk we made another step forward. We worked out the Joint American Study Co. agreement, which was, with slight variation, a method of implementing the general option which we had obtained in 1929. It was agreed that we would organize an American corporation, the Joint American Study Co., afterward abbreviated to Jasco, in which the two companies would be equal partners. This company was the vehicle through which there were to be developed and licensed the processes of making chemical products from oil raw material.

The arrangement had one extremely significant provision, however. This was that neither party was obligated to put into Jasco any development, no matter what its nature, in a business in which he was already engaged. The whole thing was therefore limited in its scope to brand-new developments not yet commercialized by either party. This relieved Standard of all obligations to I. G. on the only lines of oil-chemical work on which it had any existing assets or prospects—the manufacture of alcohols and similar chemical solvents from oil and the manufacture of antiknock compounds for gasoline. In 1929 we had invested in these oil-chemical fields about $3,000,000, and we expected this business to grow. It has grown. Our investments have increased from about $3,000,000 to about $30,000,000.

Digitized by Google

As a result of this provision, I. G. was obligated to put into the new joint company many processes not yet commercially used, but upon which it had spent great sums of money—such as the acetylene process, the soap process, and the buna rubber process. On the other hand, Standard had no counterrailing asets to offer.

THE REAL EFFECT

This inequity was met by adhering to the 50–50 ownership, but adding the provision that the party originating any process should receive five-eighths of the financial return on that process, and the other party only a three-eighths interest. It was natural that the majority interest should have the deciding voice on development and licensing.

In the practical operation of Jasco, therefore, the parties adopted the natural rule that the one originating a particular process should also have control of it.

The Jasco arrangement had the effect, therefore, of giving to Standard a three-eighths interest in some new oil-chemical processes in return for simply putting up one-half of the money used in their commercial development, and the development itself was to be done in the United States.

Standard was then a novice in this field. It had its education still to get. It had at the time no processes to contribute and, as a matter of fact, never contributed any during the 10 years of this arrangement. But if it had ever had any such process to contribute it would have given up only a three-eighths interest and retained control.

BUTYL BELONGS TO AMERICA

Mr. Gibson told you that we would not have had control of butyl rubber, even though we would have had a five-eighths financial interest in it. He is entirely wrong. Butyl rubber has not been and cannot be, made on a large scale except as part of an oil business, and therefore control automatically remained with us under the 1929 agreement. The 1930 agreement only confirmed this situation, since under it the parties soon adopted the sensible working rule that the originator should have control.

The butyl rubber process of course came within the terms of the Jasco arrangement and would have eventually come into Jasco if the war had not intervened. If so it would have been a partial offset to the buna and other processes which I. G. had put in. As a matter of fact, the war did intervene and the entire arrangement was recast into a geograpical division rather than a partnership of the parties throughout the world, so that I. G. never even acquired a minority interest in butyl rubber in the United States, where its principal value will certainly always lie.

SUMMARY OF CONTRACTS WITH I. G. F.

The net result therefore of the so-called chemical cartel created by the 1929 general option agreement and the 1930 agreement implementing this general option was that Standard acquired a minority interest in a group of oil-chemical processes which I. G. had developed and owned and would have continued to own exclusively except for this arrangement. Standard gave in return an agreement to sell to I. G. at a price to be determined at the time, control of chemical inventions entirely outside the oil industry, none of which inventions of any consequence Standard had made before or has made since. In addition we agreed to give a minority interest in Standard inventions in the oil-chemical field, outside of the lines in which Standard might be engaged at the time. Although Standard's oil-chemical business actually expanded tenfold between 1929 and 1941, this expansion was in fields outside of the I. G. contract, and the first process of Standard's within the scope of this alleged world chemical cartel was the butyl process, which will become a commercial reality in the United States for the first time this December, 3 years after the Jasco contract was completely revised to eliminate all interest of I. G. in the United States patents coming under the contract.

SYNTHETIC ACETIC ACID

Now let me take up specifically some of the statements of witnesses who have attacked us here before you.

Mr. Irving Lipkowitz, an economic expert in the Antitrust Division, took more than a day of the time of this committee painting a distorted picture of our op-

Digitized by Google

erations with acetic acid, acetylene, and acetaldehyde. His own summary of this story was this:

"During the early 1930's I. G. Farben of Germany held the United States patents on a new and promising process for making acetylene, the principal material used in the manufacture of synthetic acetic acid. By an adroit manipulation of these patents, and by a clever use of its partnership with Standard Oil of New Jersey, I. G. Farben succeeded in preventing the full development and utilization of that process."

As Mr. Lipkowitz says, I. G. owned the process and the patents on it granted to them by our Government. When we signed our contract with I. G. covering this process they became obligated to put up some money with us for experiments to see what could be done with it. Those experiments cost $1,500,000, half of which I. G. had to put up. Out of those experiments we hoped to find a missing link in the synthetic rubber chain (cheap acetaldehyde), and incidentally to recover the cost of the work by selling any acetic acid we produced.

Now, gentlemen, if I. G. had wanted to prevent the development and utilization of this process, all they had to do, obviously, was not to sign such a contract with us. It was the contract which started something—not stopped something. Let's put it in the simplest terms. I. G. owned a mining claim. They gave us a share of the claim on condition that we put up some money jointly with them to sink a shaft and see if we could get any ore out of the mine.

This the witness called a deep-dye plot of I. G. to stifle the production of ore.

I may add, gentlemen, that after spending $1,500,000 we found out that the mine was worthless. We were never able to produce either acetylene or acetic acid by these methods on a commercially attractive basis, although we often thought we were just on the point of doing so. Nor were we ever able to persuade anyone to buy a license for the process, although we peddled the process industriously in an effort to get our money back that way.

The experiments on this process were conducted in the United States over the period 1931 to 1935. When these experiments were started, we had at Baton Rouge, La., power costing approximately 2 mills per kilowatt-hour. We also had a special cut of refinery gas from which the acetylene could be made with less power requirements than from any other cut. However, by 1935 our cost of available power at Baton Rouge had increased to about 4 mills per kilowatt-hour and shortly thereafter we were using the special cut of refinery gas for making another chemical product, ethyl chloride, needed in our business. As a result of these two factors, the cost of power for this process for producing acetylene from refinery gas was increased by about 120 percent. This was primarily an electrical process so that the cost of power was a controlling factor. Without cheap power and cheap gas it offered no attraction for us or anyone else.

So far as we are concerned, the most important outcome of the whole thing is that we satisfied ourselves that this process, which was the original I. G. scheme for making rubber from oil, was not going to work in the United States.

You gentlemen know the patent laws of this country. If the inventor wants to he can sit still for 17 years with his patent and not use it himself or let anyone else use it. You have often considered whether this phase of the law should be amended, and so far you have always decided that it shouldn't. Our contract forced I. G. to do something with a patent which they could otherwise have continued to let rest in peace. Since they had owned the patent in the first place, they still retained the deciding voice on just what was to be done with it, but after they signed up with us they had to do something, and in all fairness to them, they did—they spent their half of $1,500,000 and they taught us a lot of things.

The witness also drew the fanciful conclusion that we started to tear down the pilot plant used in this work on orders from Germany when Germany went to war in September 1939. The fact of the matter is that by the end of 1937 we had virtually abandoned experimenting in the production of acetylene and acetic acid and beginning in 1936 parts of the pilot plant were taken for use in the ethyl chloride plant, since that was a more promising experiment. In May of 1939 our own people at the Baton Rouge plant suggested that instead of spending more money for maintenance we should dismantle the plant and salvage whatever we could. Acting upon our own suggestion, several months before Germany went to war, steps were taken to carry out this decision by listing all equipment for sale or transfer and arranging to dismantle the outside structures which could not be used for any other purpose.

Thus there is no support in fact for the long and fanciful tale of the witness in respect to the acetylene and acetic acid venture.

Digitized by Google

PARAFLOW

Mr. John R. Jacobs, also a special attorney in the Antitrust Division, took a day of your time to present to you his picture of the injury to American interests which he says resulted from our handling of two inventions—called Paraflow and methane steam.

That witness summarized his testimony as follows:

"My testimony before this committee will be limited to a discussion of a product called paraflow and the methane steam process, both of which were directly affected by the cartel arrangement of 1929 between Standard Oil of New Jersey and the I. G. Farbenindustrie of Germany. The formation of this cartel between these two industrial empires operated, as to paraflow, to create a complete monopoly and give to I. G. royalties which should have gone to American industry. As to the methane steam process, the effect was to restrain its use and thus to prevent our strategic explosives industry from obtaining necessary licenses under the patents to increase our war production."

Let me dispose of that, also, in a few words.

A CHEMICAL CURIOSITY

I. G. had discovered how to make a very expensive synthetic lubricating oil which was to them only a curiosity and for which they had no practical use. One of our chemists, who had been searching for years for something to put into the highest grade Pennsylvania automobile oils to keep them from freezing in cold weather, picked up a laboratory sample of this German chemical curiosity on a visit to their laboratories, brought the formula home, and found it was exactly what he was seeking. He patented the process for freeze-proofing Pennsylvania type oils by adding a small quantity of product of the chemical nature of this German synthetic oil. But the only way we could make any such product practically was to get a license from the Germans to manufacture their chemical curiosity in America. We were entitled to do this under our 1929 agreements, but we had to pay a small supplementary amount to I. G.—as provided for in the same agreement.

The actual amount paid them was 3½ percent of the profits of the business. This is the basis for the witness' statement that we "gave to I. G. royalties that should have gone to American industry."

The entire paraflow business, which turned out to be a profitable one and some consolation to us for our share of the $1,500,000 we had just dropped in the "worthless mine" I told you about, could never have been started if the I. G. organic chemists had not discovered this chemical curiosity and handed us a sample to play with.

Now as to the monopoly business. We never had any monopoly on paraflow except the 17-year monopoly the patents gave us, and that is what Government patents are for. Other companies started manufacturing freeze-proofed oils that infringed our patents or conflicted with our pending applications. In order to avoid extended controversy and litigation over patents with respect to these conflicts, we settled the controversies by acquiring the conflicting rights or granting limited licenses under our patents, in each case without interfering with the use by the other parties of their products in the sale of their oils.

The truth of the matter is that no one has yet succeeded in getting up a competing product which does not depend on our patents and which is of good enough quality to take any large amount of the paraflow business.

Whatever monopoly we have enjoyed has been due to the merits of the invention and of the product.

Trade statistics show that there has been a reduction in wholesale price in these freeze-proof oils of about 2½ cents a gallon, which has resulted from the general use of paraflow in place of the more costly methods previously used to make an oil of inferior all-around quality. We have been fortunate enough to make a profit out of this invention. The public has gotten better automobile oils at lower prices.

METHANE STEAM PROCESS

In their study of the manufacture of synthetic ammonia, which is one of their main lines of business, the I. G. had invented a process for producing hydrogen from methane and steam. This also seemed to be the best process for getting the hydrogen needed for oil hydrogenation. So when we bought the hydrogenation rights we took the rights to this methane steam process, but only for hydro-

Digitized by Google

genation, not for synthetic ammonia. We have never been in the synthetic ammonia business, but we developed the methane steam process here in America on a large scale in connection with our oil hydrogenation. We improved on it and got som patents of our own on the improvements. We gave our designs to several large refiners and some of the best engineering contractors—always with the understanding that the rights we gave them under any patents of I. G. were limited entirely to hydrogenation of oil and coal.

When the national defense program had gotten under way here there was need for new synthetic ammonia plants. Some of the contractors who were negotiating for these new ammonia plants wanted to use the methane steam plant designs which they had gotten from us for use in oil hydrogenation. Germany was, of course, already at war. Efforts by the contractors and by us to get any action out of the I. G. in Germany on patent licenses for these synthetic ammonia plants proved fruitless. We therefore took it upon ourselves to see that the Government was advised, knowing that they had full power to cut this legal Gordian knot—the only thing that stood in the way of using the underlying German inventions for producing the hydrogen for synthetic ammonia.

CUTTING THE GORDIAN KNOT

Our procedure was to write the engineering contractors, explaining exactly what the situation was, then take the letters down to Washington and review the problem with the Office of Production Management, the war agency handling the matter. Our files show that this conference took place on August 25, 1941, with Dr. Reed, head of the Chemical Division, and Mr. Eaton, Associate General Counsel of Office of Production Management. The Office of Production Management Officials took all necessary action to deal with this matter. Since it is of interest I will pass on to you statements, which I believe to be reliable, that six large ammonia plants, built under Government sponsorship and making about one-half of all the emergency ammonia to be produced in connection with the war effort, are using this process. The engineers estimate the savings of money and proportionate savings of steel and other critical materials from the use of this process to be somewhere between twenty and forty million dollars as compared with the next best process. I should explain to you that the ammonia made for war purposes goes into explosives.

The witness's summary of the methane steam matter was: "As to the methane steam process, the effect (of our contracts with I. G.) was to restrain its use and thus to prevent our strategic explosives industry from obtaining necessary licenses under the patents to increase our war production."

On the contrary, the effect was to give to this country, in advance of the war, all the knowledge and plant designs necessary to go ahead with the best process for synthetic ammonia whenever the need arose, so that by a simple act of a war agency al lof the patent complications, assumed by the witness to have been sufficient to hamstring the United States Government, were swept away.

SYNTHETIC RUBBER

On May 20, 21, and 22, 1942, Mr. Robert M. Hunter, a Special Assistant to the Attorney General, presented to your committee his interpretation of 230 documents having to do with synthetic rubber. When these 230 documents are considered on their own merits, apart from the interpretation of the witness, they show a record of which we are proud.

That witness, in introducing himself to you, confessed that his knowledge of these matters had come almost exclusively from such files of the Standard Oil Co. as he had been able to examine and that he might "have distorted the picture of some matters widely as a result of the limited horizon" he had. He admitted also that he "had no chemical background," and that he did not "hold himself out as an expert on synthetic rubber, either as to the chemistry of it or any other phase of it."

The synthetic-rubber problem is inherently one of the most complicated chemical and industrial problems this country has ever had to face. Many competent men have given the Congress and the public honest and correct appraisals of the difficulties that had to be met but in my opinion these difficulties have been enormously aggravated by the widely publicized statements of a number of fake experts and notoriety seekers who didn't know what they were talking about. Unfortunately, most of them have lacked the frankness of Mr. Hunter in ad-

Digitized by Google

mitting their inadequacies. The fact remains, however, that the American public has been confused by what they have said.

I shall try to tell you the plain facts about this matter so far as our company is concerned in terms of plain common sense and without technical detail.

ORIGIN OF BUNA

The German I. G. developed a product called Buna rubber, which they made from coal. Under our 1929 and 1930 agreement we were entitled to a three-eighths interest in Buna rubber outside Germany, but only to the extent that it was made from oil or natural gas. The German Government subsidized the work in Germany on producing buna from coal, beginning sometime around 1935 or 1936, and at the outbreak of the war in September 1939 they had just gotten into operation their first large-scale commercial plant of 25,000 tons capacity, which was probably about one-tenth of their war requirements.

There was at that time no commercial production of buna rubber in the United States, but there had been nearly 10 years of study of the problem of producing buna from oil by us here and we had had considerable help from the I. G. The bottleneck was how to get butadiene cheaply enough and in large quantities. I told you that our company and I. G. spent a million and a half dollars between 1931 and 1935 on a process which was supposed to provide the missing link but which turned out to be much too expensive.

Both I. G. and Standard had tried out several other methods of producing butadiene from oil on a small scale and we knew they would work. We also knew that buna rubber itself had been developed into a fairly good product—good enough to be reliable as a tire rubber in case of necessity. There was also a good prospect for a small commercial business making special high-cost grades of buna rubber for special purposes. At the end of 1938 I. G. and Standard were conducting initial conversations with the leading rubber companies in the United States on the merits of the buna rubber process and product.

FIRST AMERICAN BUNA TIRES

During 1939—at the very time when Hitler must have had his war all planned—five leading rubber companies in this country were running tests on buna rubber tires, using product which I. G. had supplied them at our request. Actual manufacture of the tires was carried out with the help of an expert sent from I. G. for the purpose.

At the time the war broke out in Europe what was wrong with this picture? Only one thing—that is, the process still belonged to the Germans, and we had only a minority interest.

Our solution of this situation was to eliminate I. G.'s interest in the buna process in the United States completely. We proceeded at once. Before the end of September 1939, an agreement had been worked out under which we were to take over all of the rights in the buna rubber process for the United States and the British and French Empires, and give up all our rights for the rest of the world. Within 1 month after Europe went to war, and more than 2 years before America went to war, we had eliminated all foreign interest in this process and were free to do with it whatever seemed necessary.

In 1939 almost everybody in this country, including our national leaders, hoped and believed that we could keep from being drawn into war with anyone. But if we had been gifted with foresight, if we had known that we would be at war with Germany in 1942, we could have taken no wiser step.

MUNITIONS BOARD GETS DATA

What did we do with buna rubber when we had eliminated foreign control? We did three things: First, we reported the situation to the Army and Navy Munitions Board in November 1939 and asked for advice. From that time to this we have been constantly in contact with all appropriate agencies of our Government and followed the advice they gave us. The first advice given to us by the Army and Navy Munitions Board was to try to interest the rubber companies in some sort of common effort to develop buna rubber in the United States, in the belief that such concerted effort would afford the best foundation for the necessary Government assistance in developing the new industry as a safeguard in case of emergency. We made plans to pool our interests with

Digitized by Google

the rubber companies as suggested by the Army and Navy Munitions Board, but the plans were not approved by legal counsel.

The second thing we did was to begin at once our own plans for buna rubber production in the United States. We had the advantage of a 10-year background of study of butadiene production, which was the real problem. Actual production of the rubber was relatively simple. By the time America went into the war we were in commercial production of buna rubber and had nearly finished our first oil butadiene plant, which was designed for about 10 tons a day. This gave us a production which exceeded our ability to sell the product at that time.

The third thing we did was to offer licenses to all the rubber companies we thought would be interested in producing buna rubber. Two out of the four largest companies, Firestone and United States Rubber Co., accepted these licenses promptly, and Firestone began commercial production. The other two companies who were interested in synthetic rubber, Goodyear and Goodrich, preferred to continue to develop their own processes, which though very similar to the buna process, were not, in their opinion, under the buna patents.

In the 2½ years prior to Pearl Harbor, our company submitted on 46 occasions samples of various synthetic rubbers to 7 different Government agencies or their appointed representatives.

It was not until the middle of 1941 that the Government itself undertook to do anything definite about buna rubber production. We gave Government agencies all possible assistance and never suggested that our company should have any preferential position in the Government's manufacturing program.

PEARL HARBOR

With the outbreak of war in the Pacific, the Government acted promptly to greatly expand its rubber program. To expedite this, it wanted to get a complete pool of all patents and all information which anyone had on buna rubber. The pool was formed within 2 weeks after Pearl Harbor. We threw in all of our improvement patents, as did other parties, without royalty. A royalty of 1 percent was allowed us for the basic patents for the period of the emergency, rising to 2 percent after the emergency. Again there was no question of preference of any kind to our company in the actual manufacture of the rubber or in any of the raw materials for it.

As you all know, the buna rubber program is the foundation of the entire synthetic rubber program of the Government. They expect to make, as far as we know now, 700,000 tons a year of buna rubber. In this program we agreed to supply 7,000 tons of butadiene from a plant that we already had under construction, financed with our own money, before Pearl Harbor, and 45,000 tons from two plants we are building for the Government. We offered to make raw materials. At one time, impatient for quick action from other companies, the Government asked us to assume larger commitments for butadiene. This we were willing to do, but these additional commitments were very soon undertaken by others.

While we ourselves are making only a small percentage of butadiene for the Government's program and absolutely none of the buna rubber itself in this program, plant designs and detailed processes for buna rubber and for butadiene manufacture based on our engineering are being used widely throughout the rubber and oil industries under the information and patent pools which the Government initiated with the approval of the Attorney General.

BUTYL RUBBER

To complete the rubber picture I want to comment only on one more thing—butyl rubber. Our chemists first hit on this product in 1937 as an outgrowth of their work on a somewhat similar product, vistanex, a rubberlike substance which we had obtained from I. G. In 1937 and 1938 we filed patent applications for this butyl rubber in the United States and many other countries and at the same time reported it to I. G. as a development which would come under our contracts. We did not think at the time, and we have never had any reason to think since, that butyl rubber would ever be of interest or importance in Germany except as a specialty product.

The butyl development was never a secret process, although of course the latest improvements are kept secret under Government order since the war. We had applied for patents throughout the world. And these patents, which

Digitized by Google

would have given all the essentials to I. G. or anyone else, were actually published in 1938.

Although we have spent money freely on butyl rubber development, neither the product nor the process was sufficiently advanced at the time of Pearl Harbor to be relied upon for anything more than a small proportion of the Government's rubber program. We were asked to produce annually a total of 60,000 tons of butyl rubber out of 800,000 tons total synthetic rubber production provided for.

CAPACITY INCREASED

There has been, however, continuous improvement both in the quality of butyl rubber and its manufacturing process. A few weeks ago we were able to announce that War Production Board had authorized us to change our plant designs to incorporate latest improvements which will result in raising the capacity of the butyl plants from 60,000 to 132,000 tons per annum without additional critical construction materials and with a saving in the cost of the product. We announced last March that we were entirely ready to license anyone to produce butyl rubber royalty-free for the period of the war, and at reasonable royalty rates after the war.

The witness said that there were only three technical men working on butyl rubber in May 1941. That number was mentioned in a Standard report as the number of those working on a particular phase of butyl. Our records show that throughout the year 1941 there were an average of 80.5 men working on butyl daily. If the witness had been a technically trained man he would have known that all the reports he read of May 1941 butyl work could not have come from only three men.

There has been a further recent development in butyl rubber which we call flexon. This will be made by many other people. Flexon is a somewhat inferior grade of butyl rubber which can be made with makeshift facilities, using dry ice as a refrigerant. It is hoped that a substantial quantity of this flexon can be produced in small plants at widely scattered points throughout the United States within a few months, thus tiding over the situation until the regular Government rubber program is in full operation late next year. Although we are necessarily pioneering the production of flexon, it is at present contemplated that we will make only a small proportion of the total output.

I have taken considerable time to review the history of our research relationship with I. G. and, in as few words as possible, to dispose of misrepresentations of our operations that have been made here. I would like to have leave from your committee to file an extension of my testimony when the whole record has been made available to us, in case it seems desirable to do so.

CONSENT DECREE

I have said that in the case of these 1929 contracts with I. G., we consulted the best legal opinion available. Opinion was unanimous that the contracts in no way violated antitrust laws.

Twelve years later the Antitrust Division took the position that some of those contracts did violate the antitrust law as it is now interpreted. They advised us that unless we were prepared to accept their views they would immediately file suit against us.

This country was then at war. Rather than enter upon a long legal contest with an arm of the Government in wartime, we decided to go without further argument the way the Antitrust Division wanted us to go. We signed a consent decree on March 25 of this year. In that consent decree we did not admit, nor were we asked to admit, that we had violated the antitrust law. We simply agreed that in the future we would, in respect of these contracts, follow the interpretations now being given by the Antitrust Division to this country's antitrust law.

Our idea in signing the consent decree was to have done with the matter. Apparently we were mistaken.

Like all other American businessmen, our primary concern right now is meeting the demand of war agencies for the production of miracles—demand for more and more production of better and better war weapons out of less and less plant equipment.

To save time, material, and lost motion in the production of war materials, the war agencies of our Government are urging the most complete technical cooperation on the part of industry. In buna rubber our company is in a pool

Digitized by Google

with the leading rubber companies; in butadiene manufacture we are in a pool of four chemical and four oil companies; in styrene manufacture we are in a pool of four chemical and two oil companies; in alkylation process for 100-octane gasoline we are in a pool of six companies; in catalytic cracking and in toluene production pools are just now being set up in more effective form through consultation with war agencies.

In conclusion, may I say this, Senator:

Since the days of the first Yankee clippers Americans have roamed the four corners of the earth, bringing back to this great country of ours new products, new materials, new ideas which American ingenuity has used to improve the standard of living of our people. We employees of the Standard Oil Co. are proud to be a part of that American tradition.

The question has been raised here as to whether American scientists have been less capable than German scientists. I do not want to leave that thought in the record. American scientists and technical men have proved that they are as smart as those of any country on the face of this globe. They were, in fact, smart enough, when the need arose in 1927, to take advantage of important contributions to science already made instead of wasting time by starting from scratch.

We, as a company, are proud of the wealth of technical knowledge we have brought into this country, and we are proud of what we have been able to do with this knowledge once we get it here. The whole American public has benefited in the many ways we have tried to show you here during the past 3 days.

We of the Standard Oil Co. are happy and proud that events have enabled us to make our country stronger and better equipped when our Nation needs the very best that every one of us has to give.

All of us have come down here because we felt that during these hearings our reputations, our motives, our integrity had been questioned. Others have read into cold legal documents motives which were not there. We have tried to tell you at first hand what our motives were. We have tried to show what we did for America with what we got from Germany, because what we intended to do can best be judged by the record of what we did.

I hope that we have set the record straight in your minds. We certainly have done our best to do so.

But there are more important considerations today even than the reputation of Standard Oil Co., no matter how important that may be to those of us who make up the company.

The only really important thing today is to win this war, and to win it in the quickest possible time. That is going to take every resource of all of us working together.

Hitler's slogan is "Divide and Conquer." To promote lack of harmony among his enemies is Hitler's game.

I do not want to leave this room without saying that our ambition is to work with you and with all other Americans to win this war. If you can show us how we can change what we are doing to help bring that about, we want your help. This war has not gone well for us to date. But united, we can win. United we will win. We of the Standard Oil Co. are 50,000 Americans. We are determined, as are you, to preserve for our children and our children's children those four freedoms which are dearer than life to all of us—the freedom of speech, the freedom of religious liberty, the freedom from want, the freedom from fear.

EXHIBIT 142

COMPARISON OF CERTAIN SENATE BILLS RELATING TO PATENTS

(1) S. 2491, Seventy-seventh Congress, second session, a bill to amend the patent laws, to prevent suppression of inventions, to promote the progress of science and the useful arts, and for other purposes. This bill, as well as S. 2303, discussed below, were the subject of extensive hearings before the Senate Committee on Patents in 1942. S. 2491 contains provisions which would have carried out a number of the proposals made in the final report and recommendations of the

Digitized by Google

Temporary National Economic Committee (S. Doc. No. 35, 77th Cong., 1st sess., pp. 36 and 37). The recommendations dealt with in the bill are as follows:

"(a) Licensing of patents: In order to eliminate the use of patents in ways inimical to the public policy inherent in the patent laws, as well as that of the antitrust laws, we recommend that the Congress enact legislation which will require that any future patent is to be available for use by anone who may desire its use and who is willing to pay a fair price for the privilege. Machinery, either judicial or administrative, should be set up to determine whether the royalty demanded by the patentee may fairly be said to represent reasonable compensation or is intended to set a prohibitive price for such use.

"This proposal is intended to prevent the suppression of patents as well as to provide for their availability for use in an equitable manner in any industry where they are a major factor."

[Approved. Dissenting: Sumners and Taylor.]

"(b) Unrestricted licenses: We recommend that the owner of any patent be required to grant only unrestricted licenses, and that he not be permitted to impose restrictions upon the buyer in sales of patented articles. In other words, the holder of a patent should not be permitted to restrict a licensee in respect of the amount of any article he may produce, the price at which he may sell, the purpose for which or the manner in which he may use the patent or any article produced thereunder, or the geographical area within which he may produce or sell such article. There should be a further prohibition against any other restriction which would tend substantially to lessen competition or to create a monopoly, unless such restriction is necessary to promote the progress of science and the useful arts."

[Approved without objection.]

"(c) Recording of transfers and agreements: We recommend that any sale, license, assignment, or other disposition of any patent be evidenced by an instrument in writing and that the same be required of any condition, agreement, or understanding relating to any sale or disposition of any such patent, and that in any such case a copy of such written instrument be filed with the Federal Trade Commission within 30 days after execution. There should, of course, be a substantial monetary penalty for failure to file as required."

[Approved without objection.]

* * * * * *

"(e) Forfeiture of patent for violation: If any person who owns any interest in or right under a patent violates any of the prohibitions described in paragraphs (a) and (b) above, his interest therein should be forfeited, such forfeiture to be brought about in a civil action against such person by the United States. Any patent or interest therein so forfeited should become a part of the public domain."

[Approved. Dissenting: Taylor.]

(2) S. 2303, Seventy-seventh Congress, second session, a bill to provide for the use of patents in the interest of national defense or the prosecution of war, and for other purposes. S. 2303 proposed to vest power during any war in the President to grant to any person a license to manufacture, use, or sell under any patent when such license would be in the interest of national defense or prosecution of war. Reasonable royalties, determined in accordance with regulations promulgated by the President, were to be paid under licenses so issued. The term of such license was also to be determined by the President. S. 2303 further proposed during time of war or declared emergency to vest in the President the power to acquire by purchase, donation, taking, or otherwise, patent rights where acquisition would be in the interest of national defense. Upon acquisition by taking, the owner of the patent rights was authorized to see compensation in the Court of Claims. The purpose of this bill has in part been met by the enactment of Public Law 768, Seventy-seventh Congress, an act to provide for adjusting royalties for the use of inventions for the benefit of the United States, in aid of the prosecution of the war, and for other purposes, which provides for the scaling down of excessive royalty charges to Government suppliers.

(3) S. 928, Seventy-seventh Congress, first session, a bill to establish a Circuit Court of Appeals for Patents. This bill was directed toward revision of the judicial machinery for adjudicating patent rights. Among other things, it deals with the problems arising from diversity of jurisdiction among United States courts over patent suits and the situation created by patents having a different

Digitized by Google

status in different circuits. The creation of such courts was recommended in the final report of the Temporary National Economic Committee, which stated (p. 37):

"(f) Single Court of Patent Appeals: In order to improve the existing mechanism for the issuance of patents and the determination of disputes relating thereto, we recommend the creation of a single Court of Patent Appeals with jurisdiction coextensive with the United States and its territories. Such a court would replace the present 11 different and independent jurisdictions and should do much to assure uniform treatment of patents and to reduce the time and cost of patent litigation."

(4) S. 4410, Seventy-sixth Congress, third session, a bill to protect the United States in respect of inventions usable for or against the national defense, and to protect against disclosures detrimental to the public interest of matters relating to the national defense. The purpose of this bill has been in part carried out by amendments to the patent laws providing for the issuance of secrecy orders for patents in connection with the promotion of the war effort.

S. 702, Seventy-eighth Congress, second session, introduced by Senator Kilgore, on February 11, 1943, is directed primarily toward the establishment of a unified administration to coordinate the development and utilization of the Nation's scientific and technical resources in furtherance of the war effort and the national welfare.

The Kilgore bill and the bills referred to by Senator Bone in his testimony would complement each other. Those referred to by Senator Bone deal with substantive problems in our patent system or with the judicial administration of patents, while the Kilgore bill relates to administration in promoting and developing research and the utilization of available or new techniques. The basic objectives of all these bills might be said to be the same, although each approaches the problem with different emphasis.

There might be minor features of various bills that should be clarified in connection with their possible interrelationship, but such clarification must await the final form of the various bills and will depend on the order in which legislation dealing with different phases of the patent system and the mobilization of scientific and technical resources, are enacted.

Digitized by Google

Digitized by Google

Digitized by Google

Y 4.M159 : Sc 2

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 5

OCTOBER 14, 1943

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1943

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HENRY H. COLLINS, JR., *Executive Secretary*
HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

	Page
Testimony of the Honorable Henry A. Wallace, Vice President of the United States	703

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, OCTOBER 14, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee on war mobilization met at 10:30 a. m., pursuant to call of the chairman, Senator Harley M. Kilgore, West Virginia, presiding.

Present: Senator Harley M. Kilgore, West Virginia.

Also present: Herbert Schimmel, chief investigator.

The CHAIRMAN. The committee will come to order. We are reopening the hearings on Senate bill No. 702, the technical mobilization bill, The first witness, and the only witness today, will be the Vice President of the United States, the Honorable Henry A. Wallace.

Mr. Wallace, I wish you would go ahead in your own way and give us the results of your experience and investigation with reference to mobilization, cartels, patents, and anything pertaining to development of scientific research and its proper use in the United States and abroad.

STATEMENT OF THE HONORABLE HENRY A. WALLACE, VICE PRESIDENT OF THE UNITED STATES

Mr. WALLACE. Senator, my own personal experience has been largely based on my observation of the scientific work in the Department of Agriculture.

The CHAIRMAN. Well, Mr. Vice President, a study of this bill, I believe, would convince almost anybody that it is a bill to give to industry and business the same advantage that the Department of Agriculture has been endeavoring to give to the farmer of the United States.

Mr. WALLACE. That is why I am so much interested in the bill.

I welcome this opportunity to support your interest in one of the most urgent problems before the American people today—the full use of our technological resource to win a decisive victory and to build an enduring peace. In our struggle to translate the total capabilities of this Nation into an effective striking force, we have every reason to be proud of the splendid achievements of science, both in industry and in Government. We must realize, however, that in reality we have only begun to marshal the inventive skills and energy of the American people on the scale required for the tasks which lie ahead.

There is a new and vital power at work in the modern world. The constant and rapid evolution of science and technology is a force

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, OCTOBER 14, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee on war mobilization met at 10:30 a. m., pursuant to call of the chairman, Senator Harley M. Kilgore, West Virginia, presiding.

Present: Senator Harley M. Kilgore, West Virginia.

Also present: Herbert Schimmel, chief investigator.

The CHAIRMAN. The committee will come to order. We are reopening the hearings on Senate bill No. 702, the technical mobilization bill, The first witness, and the only witness today, will be the Vice President of the United States, the Honorable Henry A. Wallace.

Mr. Wallace, I wish you would go ahead in your own way and give us the results of your experience and investigation with reference to mobilization, cartels, patents, and anything pertaining to development of scientific research and its proper use in the United States and abroad.

STATEMENT OF THE HONORABLE HENRY A. WALLACE, VICE PRESIDENT OF THE UNITED STATES

Mr. WALLACE. Senator, my own personal experience has been largely based on my observation of the scientific work in the Department of Agriculture.

The CHAIRMAN. Well, Mr. Vice President, a study of this bill, I believe, would convince almost anybody that it is a bill to give to industry and business the same advantage that the Department of Agriculture has been endeavoring to give to the farmer of the United States.

Mr. WALLACE. That is why I am so much interested in the bill.

I welcome this opportunity to support your interest in one of the most urgent problems before the American people today—the full use of our technological resource to win a decisive victory and to build an enduring peace. In our struggle to translate the total capabilities of this Nation into an effective striking force, we have every reason to be proud of the splendid achievements of science, both in industry and in Government. We must realize, however, that in reality we have only begun to marshal the inventive skills and energy of the American people on the scale required for the tasks which lie ahead.

There is a new and vital power at work in the modern world. The constant and rapid evolution of science and technology is a force

Digitized by Google

changing the lives of all men. The dynamic pressure and stimulus of technology have already altered the structure of society beyond the farthest vision of our ancestors. Yet we know that these developments are still in their early stages. The profound transformations in the economic and political basis of society resulting from technological change have posed inescapable problems to democratic governments.

If advances in science are to bring corresponding advances in well-being, freedom and opportunity for growth to the people of the world, democratic governments must assume their share of responsibility. To facilitate broad and fruitful research, to do with the adjustments which must be made, and to explore those areas of science which directly concern national welfare, it is essential for Government to offer both guidance and asistance to the creative ability of our people.

One of the most priceless possessions of this country is the inventive ingenuity of the American public. To give free play to this creative urge and to provide support and encouragement for its expression, Government must cooperate with industry and with individual inventors.

The purpose of this bill, S. 702, as I understand it, is to unleash the energies of the American people by full use of labor, resources, and technology. The method is to foster scientific research and make it available to all people. The possible results are beyond computation, but I would estimate that each dollar of Federal money spent in such an enterprise would return in a few years many dollars of increased income—more than enough to compensate the Federal Government for any Federal outlay.

Total war is primarily a contest for superiority in the quantity and quality of equipment. It is therefore essential that we summon every atom of ability we possess to provide our fighting men with the best weapons that can be made. There is no surer way to reduce the cost in lives of our soldiers than to give them arms with more deadly efficiency than the enemy can match. To this end we must make certain that every avenue of research is completely explored—that every improvement of worth is brought to the attention of the Army and Navy, and that every necessary technical facility is made available for our armed forces.

The CHAIRMAN. On that line, Mr. Vice President, recently a study of shipping disclosed that we had not shipped abroad in this war, with more shipping, as many men as we had in a commensurate period in the last war. That was occasioned by the fact that with those men we send so much equipment; that the amount of equipment necessarily curtails the number of men. It requires a tremendously greater volume of shipping to keep the same number of men abroad because of that heavy equipment brought about by technological advances.

Mr. WALLACE. As I remember, in the first instance we send with each man going overseas something like 5 to 10 tons of material, and in the case of the men in the air forces it runs something like 15 to 20 tons of material.

The CHAIRMAN. That's right.

Mr. WALLACE. And after that about a ton every month.

The CHAIRMAN. Which means that ordinarily we can send only about 600 men for every 10,000-ton ship we load out. Pardon me for interrupting.

Digitized by Google

Mr. WALLACE. Shipping of such large quantities of materials does save lives, however.

The winning of the war is only the first step in the job we have to do. If scientific discovery is to be used to repair the ravages of war and to create a society in which full employment and full production are maintained, we must open the door to technology for all our people. This war has given us an insight into the potential scientific and industrial developments of the future. In aviation, in housing, in medicine, and in a whole range of new industries we shall have the chance to find new opportunities, to create better conditions of living, and to release the dynamic energy of democratic society.

To stimulate new enterprise, technological freedom, no less than political freedom, must be safeguarded. It is the responsibility of Government to see that no artificial barriers are placed in the way of these developments. We must utilize our wealth of scientific skill to guarantee a constant flow of new ideas and industries into our economy.

Out of our laboratories, both Government and private, is coming a flood of discoveries. When the veil of secrecy imposed by war is lifted our people will stand amazed at the array of inventions. A new world is being fashioned in our laboratories. Developments of new airplanes and helicopters, light metals and plastics, television and radio, new foods and medicines, will open vast industrial frontiers. These must be turned to achieving full employment of labor and full utilization of our productive resources. Without the fullest play of the principle of free private enterprise we shall fall short of this goal.

But free enterprise will be shackled and restrained if research is dominated by a small number of large corporations and cartels. This control has already barred small businessmen from many of our industrial developments, as the hearings before your committee, as well as other congressional committees, have demonstrated.

The application of modern science should not be the exclusive domain of great corporations and cartels who can, if they desire, restrict and suppress new inventions and scientific information to suit their own interests instead of the public interest. Unless the little man has access to the bounties of technology, free enterprise will suffer to the detriment of full employment of labor and our resources.

Small business cannot support the large and costly laboratories which are necessary for modern industrial research. To fill this need Government must make available these facilities. The lack of scientific and technological resources in small business institutions has hampered the mobilization of small business for the war effort. Evidence before this committee has indicated that most of our present research is concentrated in about 100 companies. This concentration, which inevitably results in the restricted dissemination of scientific information and know-how and the restricted utilization of the benefits of science, must be replaced by the broad basis proposed by S. 702. The philosophy of this bill will give to the big man as well as the little man opportunity to make his full contribution to the maximum employment of labor and greatest utilization of our natural resources.

There is one field of research with which I feel that I am quite familiar. For more than two generations the Government has taken an active part in conducting, sponsoring, and coordinating research

Digitized by Google

in agriculture. In fact, by far the greater part of all research done in agriculture has been initiated or aided by the Government. I do not wish to detract from the credit which is quite properly being given to the farmers, food handlers, farm machinery manufacturers, processors, and distributors for the amazing job which is being done in feeding and clothing a large part of the world. I believe that they should receive all the credit which we have been giving them and more. I don't believe anyone will seriously dispute with me the statement that their ability to do this grand job is very largely due to the vast number of improvements in crop production, handling, and processing which the years have brought.

In colonial times it required 19 families on the land to produce food for themselves and for 1 family in town, whereas today 1 family on the land raises for itself and 4 families in town. For every acre the average farmer cultivated in 1850 he now can cultivate 3 acres with greater efficiency.

It is only because of the extraordinary technological discoveries of the United States Department of Agriculture and the State experimental stations in soil management, cross-breeding, and livestock feeding that we in the United States have been able so far this year to ship food abroad at an annual rate of about 10,000,000,000 pounds, and at the same time give our own consumers the best diet they have ever had.

The Department of Agriculture, the State experiment stations, financed jointly by the Federal Government and the States, the four great regional laboratories, furnish abundant and conclusive evidence that Government research can lead the way.

I read this bill, S. 702, with the background of my association with the agricultural research program. I know full well that there are great fields of necessary research which cannot and should not be entrusted to the sole control of private companies whose primary aim and responsibility is to further the interest of their stockholders. These companies, particularly the larger ones, are doing a fine job of industrial research and a very large percentage of our advancement in that field is, of course, traceable to work in large commercial laboratories. However, one needs to focus attention not upon the advancement which has been made but rather upon that which might have been made and was not and upon what should be and may not. In some cases the blame for lack of advance may be put squarely on the shoulders of private interests whose selfishness has blocked advance. In a far larger number of situations, the failure to move forward is not the fault of any single company nor of any group. It is due to the lack of an over-all agency which is so constituted as to take the long view and so equipped as to do something about it. Public-supported research has done exactly that in the field of agriculture.

The primary objective of S. 702 is to enable Government to do the same thing in industry as it has already done in agriculture, but on a broader scale. It would provide a supplementation and coordination of existing research facilities, both public and private. It would extend to all technology something similar to the benefit which has come from coordinated effort in the field of agricultural research.

I believe that the small manufacturer is in a position not unlike the owner of the family-size farm. In each case there is lacking the

Digitized by Google

money, the personnel, the time, and the facilities for conducting adequate research. The defeat and elimination of either a family-size farm or a small manufacturer may be a momentary victory for a powerful competitor, but as a rule society is the loser. The Nation cannot allow its small farmers to suffer discouragement and defeat. The extensive agricultural research program has been a real contribution to free enterprise.

I have spoken on behalf of releasing our human and natural resources for victory and for peace—on behalf of unleashing the energies of the American people by the full use of labor, resources, and technology for the benefit of all. We are well on the march to victory because we have marshaled the irresistible power of cooperation between science, Government, and all classes of our people. We shall not fail in securing a peace commensurate with the awful price we have to pay for victory if we perpetuate this spirit of cooperation—if business enterprise, statesmen, and governments here and in other lands make resources and technology and the fruits of labor and ingenuity fully available to the many.

The ingenuity of our men of science, both in Government and private enterprise, and the direction given through our democratic form of government, have overnight created vast new industries. We have diverted most of our enterprises to war purposes, but much of that we have done in the interest of speedy victory will be economic distortions in peace and will call for speedy correction. The task of converting the new plants and facilities and putting both public and private inventions to useful work will be great and complex. We will succeed if we fix our eyes on the simple rule of wise government and of truly great enterprise; namely, the greatest good to the greatest number.

Other peoples, their governments, their scientists and their private enterprises face even greater problems than ours.

I may say that yesterday I was talking with Lord Keynes and he indicated that he felt the problem in this country would be greater than in England. I want to indicate that while there are countries which will have a greater problem than we will have, yet nevertheless we will have a greater problem than some other countries, especially England, because of the fact that England has increased her total output during the war—over the immediate pre-war period—by only some 15 percent. Her industry was quite fully employed in 1938 to 1939. We, on the other hand, had as recently as 1940 about 9,000,000 people unemployed and as a result of the stimulus of war we have increased our productivity by at least 30 percent, and probably by more than 40 percent. Therefore, the problem of reconversion will be very much greater in this country than in England.

The CHAIRMAN. Isn't it true that where we have gone in strongly for the building of huge plants in this country, England has largely utilized existing facilities?

Mr. WALLACE. That is entirely right. The regional distribution of our plants was governed more by doing the job with the greatest possible speed, falling into the pattern habits of large industry, rather than from a standpoint of putting the plants where there was the greatest reservoir of unemployed labor, rather than putting the plants where they would do the greatest good for our economy in the future.

The CHAIRMAN. That was necessary because we had to get a vastly increased production in a very short time.

Digitized by Google

Digitized by Google

4.M59:Sc2

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 5

OCTOBER 14, 1943

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1943

84949

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HENRY H. COLLINS, JR., *Executive Secretary*
HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

	Page
Testimony of the Honorable Henry A. Wallace, Vice President of the United States	703

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, OCTOBER 14, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee on war mobilization met at 10:30 a. m., pursuant to call of the chairman, Senator Harley M. Kilgore, West Virginia, presiding.

Present: Senator Harley M. Kilgore, West Virginia.

Also present: Herbert Schimmel, chief investigator.

The CHAIRMAN. The committee will come to order. We are reopening the hearings on Senate bill No. 702, the technical mobilization bill, The first witness, and the only witness today, will be the Vice President of the United States, the Honorable Henry A. Wallace.

Mr. Wallace, I wish you would go ahead in your own way and give us the results of your experience and investigation with reference to mobilization, cartels, patents, and anything pertaining to development of scientific research and its proper use in the United States and abroad.

STATEMENT OF THE HONORABLE HENRY A. WALLACE, VICE PRESIDENT OF THE UNITED STATES

Mr. WALLACE. Senator, my own personal experience has been largely based on my observation of the scientific work in the Department of Agriculture.

The CHAIRMAN. Well, Mr. Vice President, a study of this bill, I believe, would convince almost anybody that it is a bill to give to industry and business the same advantage that the Department of Agriculture has been endeavoring to give to the farmer of the United States.

Mr. WALLACE. That is why I am so much interested in the bill.

I welcome this opportunity to support your interest in one of the most urgent problems before the American people today—the full use of our technological resource to win a decisive victory and to build an enduring peace. In our struggle to translate the total capabilities of this Nation into an effective striking force, we have every reason to be proud of the splendid achievements of science, both in industry and in Government. We must realize, however, that in reality we have only begun to marshal the inventive skills and energy of the American people on the scale required for the tasks which lie ahead.

There is a new and vital power at work in the modern world. The constant and rapid evolution of science and technology is a force

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, OCTOBER 14, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee on war mobilization met at 10:30 a. m., pursuant to call of the chairman, Senator Harley M. Kilgore, West Virginia, presiding.

Present: Senator Harley M. Kilgore, West Virginia.

Also present: Herbert Schimmel, chief investigator.

The CHAIRMAN. The committee will come to order. We are reopening the hearings on Senate bill No. 702, the technical mobilization bill, The first witness, and the only witness today, will be the Vice President of the United States, the Honorable Henry A. Wallace.

Mr. Wallace, I wish you would go ahead in your own way and give us the results of your experience and investigation with reference to mobilization, cartels, patents, and anything pertaining to development of scientific research and its proper use in the United States and abroad.

STATEMENT OF THE HONORABLE HENRY A. WALLACE, VICE PRESIDENT OF THE UNITED STATES

Mr. WALLACE. Senator, my own personal experience has been largely based on my observation of the scientific work in the Department of Agriculture.

The CHAIRMAN. Well, Mr. Vice President, a study of this bill, I believe, would convince almost anybody that it is a bill to give to industry and business the same advantage that the Department of Agriculture has been endeavoring to give to the farmer of the United States.

Mr. WALLACE. That is why I am so much interested in the bill.

I welcome this opportunity to support your interest in one of the most urgent problems before the American people today—the full use of our technological resource to win a decisive victory and to build an enduring peace. In our struggle to translate the total capabilities of this Nation into an effective striking force, we have every reason to be proud of the splendid achievements of science, both in industry and in Government. We must realize, however, that in reality we have only begun to marshal the inventive skills and energy of the American people on the scale required for the tasks which lie ahead.

There is a new and vital power at work in the modern world. The constant and rapid evolution of science and technology is a force

Digitized by Google

changing the lives of all men. The dynamic pressure and stimulus of technology have already altered the structure of society beyond the farthest vision of our ancestors. Yet we know that these developments are still in their early stages. The profound transformations in the economic and political basis of society resulting from technological change have posed inescapable problems to democratic governments.

If advances in science are to bring corresponding advances in well-being, freedom and opportunity for growth to the people of the world, democratic governments must assume their share of responsibility. To facilitate broad and fruitful research, to do with the adjustments which must be made, and to explore those areas of science which directly concern national welfare, it is essential for Government to offer both guidance and asistance to the creative ability of our people.

One of the most priceless possessions of this country is the inventive ingenuity of the American public. To give free play to this creative urge and to provide support and encouragement for its expression, Government must cooperate with industry and with individual inventors.

The purpose of this bill, S. 702, as I understand it, is to unleash the energies of the American people by full use of labor, resources, and technology. The method is to foster scientific research and make it available to all people. The possible results are beyond computation, but I would estimate that each dollar of Federal money spent in such an enterprise would return in a few years many dollars of increased income—more than enough to compensate the Federal Government for any Federal outlay.

Total war is primarily a contest for superiority in the quantity and quality of equipment. It is therefore essential that we summon every atom of ability we possess to provide our fighting men with the best weapons that can be made. There is no surer way to reduce the cost in lives of our soldiers than to give them arms with more deadly efficiency than the enemy can match. To this end we must make certain that every avenue of research is completely explored—that every improvement of worth is brought to the attention of the Army and Navy, and that every necessary technical facility is made available for our armed forces.

The CHAIRMAN. On that line, Mr. Vice President, recently a study of shipping disclosed that we had not shipped abroad in this war, with more shipping, as many men as we had in a commensurate period in the last war. That was occasioned by the fact that with those men we send so much equipment; that the amount of equipment necessarily curtails the number of men. It requires a tremendously greater volume of shipping to keep the same number of men abroad because of that heavy equipment brought about by technological advances.

Mr. WALLACE. As I remember, in the first instance we send with each man going overseas something like 5 to 10 tons of material, and in the case of the men in the air forces it runs something like 15 to 20 tons of material.

The CHAIRMAN. That's right.

Mr. WALLACE. And after that about a ton every month.

The CHAIRMAN. Which means that ordinarily we can send only about 600 men for every 10,000-ton ship we load out. Pardon me for interrupting.

Digitized by Google

Mr. WALLACE. Shipping of such large quantities of materials does save lives, however.

The winning of the war is only the first step in the job we have to do. If scientific discovery is to be used to repair the ravages of war and to create a society in which full employment and full production are maintained, we must open the door to technology for all our people. This war has given us an insight into the potential scientific and industrial developments of the future. In aviation, in housing, in medicine, and in a whole range of new industries we shall have the chance to find new opportunities, to create better conditions of living, and to release the dynamic energy of democratic society.

To stimulate new enterprise, technological freedom, no less than political freedom, must be safeguarded. It is the responsibility of Government to see that no artificial barriers are placed in the way of these developments. We must utilize our wealth of scientific skill to guarantee a constant flow of new ideas and industries into our economy.

Out of our laboratories, both Government and private, is coming a flood of discoveries. When the veil of secrecy imposed by war is lifted our people will stand amazed at the array of inventions. A new world is being fashioned in our laboratories. Developments of new airplanes and helicopters, light metals and plastics, television and radio, new foods and medicines, will open vast industrial frontiers. These must be turned to achieving full employment of labor and full utilization of our productive resources. Without the fullest play of the principle of free private enterprise we shall fall short of this goal.

But free enterprise will be shackled and restrained if research is dominated by a small number of large corporations and cartels. This control has already barred small businessmen from many of our industrial developments, as the hearings before your committee, as well as other congressional committees, have demonstrated.

The application of modern science should not be the exclusive domain of great corporations and cartels who can, if they desire, restrict and suppress new inventions and scientific information to suit their own interests instead of the public interest. Unless the little man has access to the bounties of technology, free enterprise will suffer to the detriment of full employment of labor and our resources.

Small business cannot support the large and costly laboratories which are necessary for modern industrial research. To fill this need Government must make available these facilities. The lack of scientific and technological resources in small business institutions has hampered the mobilization of small business for the war effort. Evidence before this committee has indicated that most of our present research is concentrated in about 100 companies. This concentration, which inevitably results in the restricted dissemination of scientific information and know-how and the restricted utilization of the benefits of science, must be replaced by the broad basis proposed by S. 702. The philosophy of this bill will give to the big man as well as the little man opportunity to make his full contribution to the maximum employment of labor and greatest utilization of our natural resources.

There is one field of research with which I feel that I am quite familiar. For more than two generations the Government has taken an active part in conducting, sponsoring, and coordinating research

Digitized by Google

in agriculture. In fact, by far the greater part of all research done in agriculture has been initiated or aided by the Government. I do not wish to detract from the credit which is quite properly being given to the farmers, food handlers, farm machinery manufacturers, processors, and distributors for the amazing job which is being done in feeding and clothing a large part of the world. I believe that they should receive all the credit which we have been giving them and more. I don't believe anyone will seriously dispute with me the statement that their ability to do this grand job is very largely due to the vast number of improvements in crop production, handling, and processing which the years have brought.

In colonial times it required 19 families on the land to produce food for themselves and for 1 family in town, whereas today 1 family on the land raises for itself and 4 families in town. For every acre the average farmer cultivated in 1850 he now can cultivate 3 acres with greater efficiency.

It is only because of the extraordinary technological discoveries of the United States Department of Agriculture and the State experimental stations in soil management, cross-breeding, and livestock feeding that we in the United States have been able so far this year to ship food abroad at an annual rate of about 10,000,000,000 pounds, and at the same time give our own consumers the best diet they have ever had.

The Department of Agriculture, the State experiment stations, financed jointly by the Federal Government and the States, the four great regional laboratories, furnish abundant and conclusive evidence that Government research can lead the way.

I read this bill, S. 702, with the background of my association with the agricultural research program. I know full well that there are great fields of necessary research which cannot and should not be entrusted to the sole control of private companies whose primary aim and responsibility is to further the interest of their stockholders. These companies, particularly the larger ones, are doing a fine job of industrial research and a very large percentage of our advancement in that field is, of course, traceable to work in large commercial laboratories. However, one needs to focus attention not upon the advancement which has been made but rather upon that which might have been made and was not and upon what should be and may not. In some cases the blame for lack of advance may be put squarely on the shoulders of private interests whose selfishness has blocked advance. In a far larger number of situations, the failure to move forward is not the fault of any single company nor of any group. It is due to the lack of an over-all agency which is so constituted as to take the long view and so equipped as to do something about it. Public-supported research has done exactly that in the field of agriculture.

The primary objective of S. 702 is to enable Government to do the same thing in industry as it has already done in agriculture, but on a broader scale. It would provide a supplementation and coordination of existing research facilities, both public and private. It would extend to all technology something similar to the benefit which has come from coordinated effort in the field of agricultural research.

I believe that the small manufacturer is in a position not unlike the owner of the family-size farm. In each case there is lacking the

Digitized by Google

money, the personnel, the time, and the facilities for conducting adequate research. The defeat and elimination of either a family-size farm or a small manufacturer may be a momentary victory for a powerful competitor, but as a rule society is the loser. The Nation cannot allow its small farmers to suffer discouragement and defeat. The extensive agricultural research program has been a real contribution to free enterprise.

I have spoken on behalf of releasing our human and natural resources for victory and for peace—on behalf of unleashing the energies of the American people by the full use of labor, resources, and technology for the benefit of all. We are well on the march to victory because we have marshaled the irresistible power of cooperation between science, Government, and all classes of our people. We shall not fail in securing a peace commensurate with the awful price we have to pay for victory if we perpetuate this spirit of cooperation—if business enterprise, statesmen, and governments here and in other lands make resources and technology and the fruits of labor and ingenuity fully available to the many.

The ingenuity of our men of science, both in Government and private enterprise, and the direction given through our democratic form of government, have overnight created vast new industries. We have diverted most of our enterprises to war purposes, but much of that we have done in the interest of speedy victory will be economic distortions in peace and will call for speedy correction. The task of converting the new plants and facilities and putting both public and private inventions to useful work will be great and complex. We will succeed if we fix our eyes on the simple rule of wise government and of truly great enterprise; namely, the greatest good to the greatest number.

Other peoples, their governments, their scientists and their private enterprises face even greater problems than ours.

I may say that yesterday I was talking with Lord Keynes and he indicated that he felt the problem in this country would be greater than in England. I want to indicate that while there are countries which will have a greater problem than we will have, yet nevertheless we will have a greater problem than some other countries, especially England, because of the fact that England has increased her total output during the war—over the immediate pre-war period—by only some 15 percent. Her industry was quite fully employed in 1938 to 1939. We, on the other hand, had as recently as 1940 about 9,000,000 people unemployed and as a result of the stimulus of war we have increased our productivity by at least 30 percent, and probably by more than 40 percent. Therefore, the problem of reconversion will be very much greater in this country than in England.

The CHAIRMAN. Isn't it true that where we have gone in strongly for the building of huge plants in this country, England has largely utilized existing facilities?

Mr. WALLACE. That is entirely right. The regional distribution of our plants was governed more by doing the job with the greatest possible speed, falling into the pattern habits of large industry, rather than from a standpoint of putting the plants where there was the greatest reservoir of unemployed labor, rather than putting the plants where they would do the greatest good for our economy in the future.

The CHAIRMAN. That was necessary because we had to get a vastly increased production in a very short time.

Digitized by Google

Mr. WALLACE. But our problem is the greater.

Many countries have had their resources not only distorted to war purposes but actually destroyed by the ravages of war. Some of them fear that their post-war markets for their resources have been placed in great jeopardy by the sudden rise of substitute industries elsewhere. Great as is our need for the full release of our scientific discoveries so that none of our regions, none of our occupations, and none of our industries be plagued with joblessness, even greater will be the call in other countries upon the power of government and technology because of the dual need for rehabilitation and for creating new uses for their raw materials and labor resources. If we or any other country find it necessary in the general interest to retain the newly created industries that deprive other countries of their pre-war markets, the living standards of other countries need not be undermined if modern science has a chance to put itself to work in the interest of the general welfare.

Science and technology, like good will, have no natural bounds. They can now counteract the maldistribution of the world's raw materials, and make nations less dependent upon distant sources of supply. They have also demonstrated another fact of tremendous import; namely, that natural resources are transmutable, interchangeable, and capable of multiple uses.

Increasingly, technology has become a concern of statecraft. The abrupt impact of science often produces maladjustments in our own economy and in the economic life of other countries. Government must be competent to deal with such situations, and to work out fair and just solutions.

To meet such needs, Government requires sufficient technical resources and information to formulate and to carry out sound technological policies.

It seems clear to me that this committee, in investigating the mobilization of scientific and technical resources, is working on one of the most important factors in winning the war and creating a secure, prosperous peace. The welfare and safety of our Nation depends upon a rapid growth of our sciences and techniques. But it also requires that the scientific findings be used to the benefit of all sections of the Nation. Both wartime and peacetime experience shows that, to insure this, advances should be made along the lines of S. 702. The most important in my opinion are:

1. There should be set up a central technical authority of the Federal Government. This authority should coordinate the increasing activities of the Government in scientific fields. It should not dictate the methods to be carried out by existing Federal scientific bureaus, but should serve as a clearing house for these organizations. It should help their understanding and willingness to work together as a team.

2. Every business and institution should have full access to all patents and research findings which have been developed at Government expense. The Congress has provided large sums of money, which are being poured into Federal, university, and industrial laboratories. It is the intention of the Congress that this money be spent for the benefit of the general public, not for the exclusive benefit of a few corporations. Likewise, the enemy patents seized by the Alien Property Custodian should become the property of the Federal Government and be made available to all businesses. These

Digitized by Google

patents should not be turned over to a few corporations or returned to their former alien ownership. The compensation should eventually be made to Axis nationals under procedures prescribed for all types of seized enemy property.

3. Federal support of research has achieved remarkable results in this war. This support should be continued in the post-war period. Today large corporations hold a virtual monopoly over laboratory facilities engaged in applied research. But there are many fields of research which are not fully covered by existing laboratory set-ups. There are a number of fields which require Federal support. I believe that Federal funds should support especially (*a*) fundamental science, the mother of applied science, with which the welfare and prosperity of the Nation rests; (*b*) research and development wherever it affects national interest such as in national defense, public health, public housing and the balanced regional development of the entire Nation. The Federal Government should see to it that the results of this research be distributed throughout the South as well as the North, the West as well as the East. There should be no concentration of benefits in specific institutions or areas.

4. Small business is in drastic need of technical information. Each State should have a technical information center. This center could distribute existing information which is in the hands of Federal agencies. But, more important, it could initiate research projects which are of special importance to the local area.

I can see no reason why the Federal Government cannot conduct the above activities while the Nation at the same time continues to benefit from private research. It can even assist industries which have up to now not realized the value of conducting their own private research. The balanced growth of all industries is of great importance to the progressive economic development of the country in the war and the post-war period alike.

If we use the catalytic, that is the stimulating, power of Government to aid private enterprise to serve the economic needs of the common man; if we cooperate with other governments to direct the good will that is in all of us and the genius that burns in the real men of science and enterprise toward a common goal; and if that common goal is abundance, security, and happiness, the present hell of war will be more certainly succeeded by the happiness of peace.

The CHAIRMAN. Returning to the question of agricultural development with Federal aid, my understanding has always been that the Department of Agriculture never interfered with new developments advanced by private industry. In other words, if some company got out a better harvester, the Department of Agriculture sought to help push that harvester in order to get better work on the farm; is that right?

Mr. WALLACE. Well, the Department of Agriculture never invented a harvester. It has developed certain machinery, but it has always cooperated with private enterprise.

The CHAIRMAN. But it sought to bring to the attention of the farmer the results of the inventions of private enterprise?

Mr. WALLACE. That is correct.

The CHAIRMAN. I have also been informed that in the United States we produce more on the farm, per man, today than do the European nations, due to our advanced farming techniques.

Digitized by Google

Mr. WALLACE. The average farmer and farm worker in the United States produces about five times as much as the average farm worker on the Continent of Europe.

The CHAIRMAN. In other words, then, we can produce the same amount of food with one-fifth the number of people engaged, or in one-fifth the labor time required abroad?

Mr. WALLACE. That is correct. I would not want an incorrect conclusion to be drawn. My statement should not reflect on the industry and hard-working ability of the European farmer, the European peasant. Typically, he has a much smaller area of land available to work and therefore finds it impossible to use many of the methods which our farmers have used so effectively.

The CHAIRMAN. Isn't it true that he has not been educated in the use of the more modern techniques by his governmental agencies to the same extent as in the United States?

Mr. WALLACE. There is, so far as I know, in no nation a scientific set-up at the disposal of the farmer equal to that which we have in the United States.

The CHAIRMAN. Another thing I am interested in with reference to agriculture, isn't it true that the Department of Agriculture's activities are such that they contribute funds and help to the various State universities but do not dictate their policies or methods?

Mr. WALLACE. The Federal money for State experimentation has been turned over to the State institutions with so few strings attached that there has been, until rather recently, very little coordination between the activities of the different State institutions.

The CHAIRMAN. Taking the success of the Department of Agriculture, would it not be advantageous to business, big and small, if a similar coordinating agency were set up to see that there were made available the best techniques, the best shop practices, and the most modern technical developments, in the interest of a competitive industrial system in the United States?

Mr. WALLACE. I think it would bring in most astounding returns and I hope the committee will look into the following point: Isn't it true that while the United States has led the way in governmental leadership in agricultural research, that there are other countries, notably Germany, where governmental leadership in industrial research has been very, very much ahead of anything that we have done in this Nation?

The CHAIRMAN. That is correct, unquestionably.

Mr. WALLACE. There would seem to be a danger that this country might fall behind industrially, or that what industrial research is conducted would be so exclusively in the hands of a few great corporations that our business would tend more to fall into huge over-all patterns.

The CHAIRMAN. In Germany hasn't the result been that the research sponsored by the Government has come into the hands of a few companies that are Government-controlled, which is not the democratic process and which we must avoid in our process?

Mr. WALLACE. I certainly would not hold Germany up to emulation in respect to the way in which the governmentally sponsored research has been used; quite the contrary.

Digitized by Google

The CHAIRMAN. One more thing, will not a flourishing competitive business, extending to the small businessman and the small manufacturer, help us in the post-war period on the question of war debts, by increasing the earning power of the United States, which automatically increases the amount we can apply on these debts?

Mr. WALLACE. It seems to me to be the only way in which we can shoulder the post-war debt easily. You might be interested in an overall summary in that respect.

The CHAIRMAN. I would be.

Mr. WALLACE. If, for example, the war should stop at a time when we had a total debt of $200,000,000,000—say, sometime during the year 1944—the interest on that debt, plus the interest on private debt, assuming current interest rates, would be a sum which, relative to a national income of $130,000,000,000 would be about the same percentage as existed back in 1929. Therefore the problem in carrying a $200,000,000,000 debt as easily as we did in 1929 would consist of having a national income of $130,000,000,000. Today, the national income is running perhaps at the rate of one hundred and forty or one hundred and forty-five billion dollars. In the post-war period, to attain a national income of $130,000,000,000, turning out the goods of peace, rather than the goods of war, it will be necessary not merely to have the great corporations which have received the greater part of the war contracts doing their job in full, but also to have a large number of small businessmen producing their segment of this $130,000,000,000 worth of business a year.

The CHAIRMAN. Another thing is this: Improved shop practices will enable us to produce in competition, don't you think, with the cheap labor abroad, so that we can continue to do business and not be injured as we were, by small stuff particularly, when Japan debased the yen in order to cut the earning power of their workers to meet the competition of American business.

Mr. WALLACE. I would hesitate to make a sweeping statement with regard to that because I don't happen to be familiar, technologically speaking, with the degree to which further research might make it possible to apply our superior inventive power and our superior know-how to meet Japanese competition, which might be based on an 80-hour week and 40-cents-a-day pay.

The CHAIRMAN. However, there is only one way to keep a man's wages the same and make him produce more and that is to teach him a better, quicker way to do the same job.

Mr. WALLACE. I am convinced that over any long-run period you can't keep labor down the way Japan has kept her labor down.

The CHAIRMAN. Unless you have something further, I think that is all, Mr. Vice President, and we appreciate your contribution here.

Mr. WALLACE. I believe this problem is of the utmost importance and I hope the committee continues its work along this line.

The CHAIRMAN. We are going to keep studying this problem and get all the information available.

We will recess until tomorrow at 10 a. m.

(Whereupon at 11:35 a. m. the subcommittee recessed until 10 a. m., Friday, October 15, 1943.)

×

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Y4.M59:Sci2

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 6

OCTOBER 15 AND 21, 1943

MONOPOLY AND CARTEL PRACTICES

Vitamin D

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
84949 WASHINGTON : 1944

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
CHARLES KRAMER, *Economic Adviser*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

	Page
Testimony of the Honorable Wendell Berge, Assistant Attorney General of the United States, in charge of the Antitrust Division, Department of Justice	713
Friday, October 15, 1943	713
Thursday, October 21, 1943	739

SCHEDULE OF EXHIBITS

No.	Exhibit	Introduced on page—	Appears on page—
143	Proposed substitute General Electric-American Telephone & Telegraph license agreement, memorandum by F. B. Jewett	716	935
144	Letter dated Dec. 15, 1934, from an official of the du Pont Co. to E. W. Webb, president of the Ethyl Corporation	725	939
145	Letter dated Jan. 12, 1935, from E. W. Webb to the Chief of the Army Air Corps	725	939
146	Letter dated July 11, 1935, from E. G. Robinson, of the du Pont Co., to J. K. Jenney	726	942
147	Agreement relating to the manufacture and sale of ethyl fluid in Germany	726	943
148	Agreement relating to the manufacture and sale of ethyl fluid in Italy, etc	726	944
149	Letter dated Mar. 15, 1940, from L. B. Vernon, of the Vernon-Benshoff Co., to Röhm & Haas Co	729	947
150	Letter dated Mar. 21, 1940, from D. S. Frederick, Röhm & Haas Co., to L. B. Vernon	730	947
151	Report dated June 26, 1940, from S. R. Detrick, of the Jackson Laboratory, du Pont Co., to H. A. Lubs (minutes of conference on "Monastral" colors for paints and dye pigments in Wilmington, June 18, 1940)	731	947
152	Memorandum dated June 28, 1940, of discussion between representatives of General Aniline Works and du Pont Co	731	949
153	Letter dated Oct. 20, 1943, from R. T. Haslam, Standard Oil Co. of New Jersey, to Senator Harley M. Kilgore, with enclosures	------	951
154	Chart, in committee files, submitted by Wendell Berge, showing American and British participation in the ownership of tetraethyl-lead production facilities of Germany	726	----------

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
CHARLES KRAMER, *Economic Adviser*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

	Page
Testimony of the Honorable Wendell Berge, Assistant Attorney General of the United States, in charge of the Antitrust Division, Department of Justice	713
Friday, October 15, 1943	713
Thursday, October 21, 1943	739

SCHEDULE OF EXHIBITS

No.	Exhibit	Introduced on page—	Appears on page—
143	Proposed substitute General Electric-American Telephone & Telegraph license agreement, memorandum by F. B. Jewett	716	935
144	Letter dated Dec. 15, 1934, from an official of the du Pont Co. to E. W. Webb, president of the Ethyl Corporation	725	939
145	Letter dated Jan. 12, 1935, from E. W. Webb to the Chief of the Army Air Corps	725	939
146	Letter dated July 11, 1935, from E. G. Robinson, of the du Pont Co., to J. K. Jenney	726	942
147	Agreement relating to the manufacture and sale of ethyl fluid in Germany	726	943
148	Agreement relating to the manufacture and sale of ethyl fluid in Italy, etc	726	944
149	Letter dated Mar. 15, 1940, from L. B. Vernon, of the Vernon-Benshoff Co., to Röhm & Haas Co	729	947
150	Letter dated Mar. 21, 1940, from D. S. Frederick, Röhm & Haas Co., to L. B. Vernon	730	947
151	Report dated June 26, 1940, from S. R. Detrick, of the Jackson Laboratory, du Pont Co., to H. A. Lubs (minutes of conference on "Monastral" colors for paints and dye pigments in Wilmington, June 18, 1940)	731	947
152	Memorandum dated June 28, 1940, of discussion between representatives of General Aniline Works and du Pont Co	731	949
153	Letter dated Oct. 20, 1943, from R. T. Haslam, Standard Oil Co. of New Jersey, to Senator Harley M. Kilgore, with enclosures	------	951
154	Chart, in committee files, submitted by Wendell Berge, showing American and British participation in the ownership of tetraethyl-lead production facilities of Germany	726	----------

Digitized by Google

SCHEDULE OF EXHIBITS—Continued

No.	Exhibit	Introduced on page—	Appears on page—
155	Material submitted by Wendell Berge relating to vitamin D, as follows:		
	Articles of organization	------	865
	Bill of particulars	------	771
	Letters	------	770, 791, 799, 800, 817, 819, 820, 863, 864, 869, 870, 874, 875, 876, 877, 888, 889, 890, 891, 892, 893, 894, 896, 897, 898, 900, 901, 908, 910, 911, 915, 916, 917, 918, 931, 932.
	License agreements	------	778, 784, 786, 792, 794, 800, 805, 812, 814, 818, 821, 825, 828, 832, 834, 838, 840, 841, 842, 845, 849, 852, 854, 856, 858, 860, 870, 875, 877, 878, 881, 882, 884, 933.
	Lists of licenses	------	773, 853, 856, 858, 860, 862, 881.
	Memoranda	------	895, 899, 907, 909, 912, 913.
	Report of trustees	------	920
	Study of the comparative therapeutic value of 2 viosterols	------	902
	Summary of royalties received by foundation	------	919

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

FRIDAY, OCTOBER 15, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee met at 10:05 a. m., pursuant to adjournment on Thursday, October 14, 1943, in room 104, Senate Office Building, Senator Harley M. Kilgore, West Virginia (chairman of the subcommittee), presiding.

Present: Senator Harley M. Kilgore, West Virginia.

Also present: Herbert Schimmel, chief investigator.

The CHAIRMAN. The committee will come to order. At today's hearing we will first hear the testimony of the Honorable Wendell Berge, who has been subpenaed from the Office of the Attorney General. Mr. Berge, I wish you would open by stating your name and official connection with the Office of the Attorney General for the purpose of the record.

TESTIMONY OF HON. WENDELL BERGE, ASSISTANT ATTORNEY GENERAL OF THE UNITED STATES

Mr. BERGE. Wendell Berge, Assistant Attorney General in charge of the Antitrust Division, Department of Justice.

The CHAIRMAN. As you know, Mr. Berge, we have been taking testimony for some time with reference to the subject of patent monopoly. We are primarily interested, of course, in the possibility of monopoly of public-developed patents or patents developed with public funds; also the question of the monopolization of technical research, at the beginning of the war and during the war, and what effect such monopolistic tendencies may have had on the war up to the present time and might have on future operations.

I wish you would proceed, Mr. Berge, and from the records of your Division give the committee the information you have.

Mr. BERGE. I shall undertake this morning to make a general statement as to our view on some of these problems and also to give some background information from the files of the Department that indicates the abuses of patent monopolies and cartels, particularly with respect to the hampering of free development of technology and research.

As I go along, I expect to cite chapter and verse to support some of the points that I wish to make and I expect to bring out specifically

Digitized by Google

some instances of flagrant abuses that have been developed. I am going to start with a brief, general statement of some of the pertinent data as we see it.

In the days of Adam Smith it was possible to measure the wealth of nations in terms of mineral resources, possession of fertile lands, and control of strategic geographical areas. Today we have a new index to the wealth and security of nations. Technology and applied science have become principal instruments in the maintenance of a high standard of living and for the protection of national interests. In fact, when we speak of the balance of power in the modern world, we must take into account the extent and quality of industrial and technological resources as a dominant factor in national welfare. The horizons which have been opened by applied science and research offer to the world, and to our own Nation in particular, new industries, greater opportunities for our youth, higher levels of health and comfort, and the attainment of that genuine social security which comes with all great advancements in human knowledge.

Technology—its directions, its applications, and its enjoyment—is today a primary concern of Government. In a system based upon freedom of enterprise, access to technology is the fundamental condition of rapid advancement toward the goals for which our Nation is striving. The power that goes with the development of modern technology has been perverted in totalitarian countries to provide instruments of aggression. Because totalitarian states have regimented science and have made it subservient to imperial ambitions, it has been used to destroy rather than to create. One of the principal problems which the United Nations will encounter in the peace to come will be the prevention of any abuse of new discoveries for the purpose of establishing war machines which can threaten the peace of the world.

The control of vital areas of research by monopolistic interests is a condition which cannot be tolerated. Monopoly control seeks to protect vested interests and to perpetuate its grip on the advancement of science and technology. It retards the introduction of new goods and services and the maintenance of full employment in time of peace. Our experiences in this war have demonstrated conclusively that monopolistic control of critical sectors of industrial research has a paralyzing effect on mobilization of our national strength. One of the most difficult problems we have encountered in arming this country has been the domination and restriction of technology by small privileged groups. It has required strenuous efforts on the part of Government and industry alike to overcome the stifling effects of complacent monopoly.

The CHAIRMAN. Mr. Berge, do you care to specify some of these groups?

Mr. BERGE. Yes. I can refer to aluminum, magnesium, military optical instruments, plastics, synthetic rubber, and a host of others. I suspect that later in these hearings we will develop in greater detail some of these specific case histories.

The CHAIRMAN. How about synthetic gasoline?

Mr. BERGE. Yes; that would certainly be one.

With rare exceptions industrial research at the present time can only be carried on by large numbers of scientists and technicians

Digitized by Google

combining their ingenuity to resolve the complex problems of both pure and applied science. In the last 50 years technology has moved at such a rapid pace that no longer is the small businessman in a position to maintain laboratories of sufficient size. Today we witness the gigantic research organizations of all major corporations, and no one desires to impair their efficiency.

There is, nevertheless, a gap between the promise of organized research conducted on a huge scale by great corporations and the fulfillment as measured by accomplishments for the public interest. So that there shall be no misunderstanding, I should like to pay tribute to the vast army of scientists and research workers who have done such remarkable work in the years of peace as well as in the years of war in bringing forth a multitude of amazing discoveries. It is not their fault that their contributions have not been fully realized.

The CHAIRMAN. Does the technologist employed by a large corporation determine the use that will be made of the discoveries he produces in the plant? In other words, it has been claimed that any effort on the part of the Government would amount to a strait jacket on the scientist. Does the technologist or scientist, working in a large laboratory, have anything to say about what is going to be done with what he invents?

Mr. BERGE. I don't think he has much to do about it, Senator. Our observation and our investigations would be that the universal practice, almost, is that the research worker or technologist obligates himself to assign to the corporation that he works for every invention or discovery that he makes while he is employed by it.

The CHAIRMAN. And that is for a very nominal figure, is it not?

Mr. BERGE. Generally, yes. They would claim, usually, that it is recognized in his salary, but I think usually it's just part of the consideration of his having the job. The way it usually works is that his superiors in his own department or officials from other departments in the company make the decision as to which, if any, of his ideas shall be used and developed, and we have found numerous instances of keen and severe disappointment and discouragement on the part of inventors—salaried inventors and scientists—at the failure of their superiors to pick up and utilize ideas which they have developed, inventions which they have made and which, as scientists, they at least feel are much in the public interest and which ought to be developed. But for some economic motive, usually, the company has felt that it couldn't go ahead and develop the invention and the man himself is not free to license it to others who might be willing to develop it.

The CHAIRMAN. Now, under the law, the corporation owning the laboratory cannot, of course, procure the patent, but under the contract with the individual the corporation requires the individual to procure the patent and assign it to the corporation which, under our patent law, is absolutely legal.

Mr. BERGE. That's right.

The trouble is that in many instances the misuse of research by monopolistic and cartelized groups has resulted in the restricting of production, withholding new products, and fencing in and blocking of new developments.

Digitized by Google

some instances of flagrant abuses that have been developed. I am going to start with a brief, general statement of some of the pertinent data as we see it.

In the days of Adam Smith it was possible to measure the wealth of nations in terms of mineral resources, possession of fertile lands, and control of strategic geographical areas. Today we have a new index to the wealth and security of nations. Technology and applied science have become principal instruments in the maintenance of a high standard of living and for the protection of national interests. In fact, when we speak of the balance of power in the modern world, we must take into account the extent and quality of industrial and technological resources as a dominant factor in national welfare. The horizons which have been opened by applied science and research offer to the world, and to our own Nation in particular, new industries, greater opportunities for our youth, higher levels of health and comfort, and the attainment of that genuine social security which comes with all great advancements in human knowledge.

Technology—its directions, its applications, and its enjoyment—is today a primary concern of Government. In a system based upon freedom of enterprise, access to technology is the fundamental condition of rapid advancement toward the goals for which our Nation is striving. The power that goes with the development of modern technology has been perverted in totalitarian countries to provide instruments of aggression. Because totalitarian states have regimented science and have made it subservient to imperial ambitions, it has been used to destroy rather than to create. One of the principal problems which the United Nations will encounter in the peace to come will be the prevention of any abuse of new discoveries for the purpose of establishing war machines which can threaten the peace of the world.

The control of vital areas of research by monopolistic interests is a condition which cannot be tolerated. Monopoly control seeks to protect vested interests and to perpetuate its grip on the advancement of science and technology. It retards the introduction of new goods and services and the maintenance of full employment in time of peace. Our experiences in this war have demonstrated conclusively that monopolistic control of critical sectors of industrial research has a paralyzing effect on mobilization of our national strength. One of the most difficult problems we have encountered in arming this country has been the domination and restriction of technology by small privileged groups. It has required strenuous efforts on the part of Government and industry alike to overcome the stifling effects of complacent monopoly.

The CHAIRMAN. Mr. Berge, do you care to specify some of these groups?

Mr. BERGE. Yes. I can refer to aluminum, magnesium, military optical instruments, plastics, synthetic rubber, and a host of others. I suspect that later in these hearings we will develop in greater detail some of these specific case histories.

The CHAIRMAN. How about synthetic gasoline?

Mr. BERGE. Yes; that would certainly be one.

With rare exceptions industrial research at the present time can only be carried on by large numbers of scientists and technicians

Digitized by Google

combining their ingenuity to resolve the complex problems of both pure and applied science. In the last 50 years technology has moved at such a rapid pace that no longer is the small businessman in a position to maintain laboratories of sufficient size. Today we witness the gigantic research organizations of all major corporations, and no one desires to impair their efficiency.

There is, nevertheless, a gap between the promise of organized research conducted on a huge scale by great corporations and the fulfillment as measured by accomplishments for the public interest. So that there shall be no misunderstanding, I should like to pay tribute to the vast army of scientists and research workers who have done such remarkable work in the years of peace as well as in the years of war in bringing forth a multitude of amazing discoveries. It is not their fault that their contributions have not been fully realized.

The CHAIRMAN. Does the technologist employed by a large corporation determine the use that will be made of the discoveries he produces in the plant? In other words, it has been claimed that any effort on the part of the Government would amount to a strait jacket on the scientist. Does the technologist or scientist, working in a large laboratory, have anything to say about what is going to be done with what he invents?

Mr. BERGE. I don't think he has much to do about it, Senator. Our observation and our investigations would be that the universal practice, almost, is that the research worker or technologist obligates himself to assign to the corporation that he works for every invention or discovery that he makes while he is employed by it.

The CHAIRMAN. And that is for a very nominal figure, is it not?

Mr. BERGE. Generally, yes. They would claim, usually, that it is recognized in his salary, but I think usually it's just part of the consideration of his having the job. The way it usually works is that his superiors in his own department or officials from other departments in the company make the decision as to which, if any, of his ideas shall be used and developed, and we have found numerous instances of keen and severe disappointment and discouragement on the part of inventors—salaried inventors and scientists—at the failure of their superiors to pick up and utilize ideas which they have developed, inventions which they have made and which, as scientists, they at least feel are much in the public interest and which ought to be developed. But for some economic motive, usually, the company has felt that it couldn't go ahead and develop the invention and the man himself is not free to license it to others who might be willing to develop it.

The CHAIRMAN. Now, under the law, the corporation owning the laboratory cannot, of course, procure the patent, but under the contract with the individual the corporation requires the individual to procure the patent and assign it to the corporation which, under our patent law, is absolutely legal.

Mr. BERGE. That's right.

The trouble is that in many instances the misuse of research by monopolistic and cartelized groups has resulted in the restricting of production, withholding new products, and fencing in and blocking of new developments.

Digitized by Google

I think one of the ablest and clearest statements of the effect of restrictive arrangements upon research was made by Dr. F. B. Jewett, vice president of the American Telephone & Telegraph, and chief of their Bell Laboratories. In discussing an agreement between his company and other parties, he stated:

> Broadly speaking, the practical effect of the agreement is to limit the field of possible development of each party to its present major activities. * * *
> Thus, while a casual reading of the agreement by one not thoroughly conversant with all the factors may appear to establish the basis for an enlarged free development in most of the fields, this is not actually the case.
> * * * * * * *
> The far-reaching effect of the proposed agreement on the character and scope of our research and development work is apparent. Viewed both from the standpoint of the research worker in our laboratories and from the standpoint of those responsible for the expenditures incurred by the laboratories, the inevitable result would be a narrowing of the field of activity and failure to undertake anything which at the outset is not clearly directed to the field of our current business. From the standpoint of the man who has a brilliant idea which in its first nebulous form seems to be applicable outside our business, there will be little or no urge to go ahead in the face of a situation where he knows that the results of his work have been sold in advance outside of the Bell System. From the standpoint of management there will likewise be no incentive, but quite the reverse, to urging him on and appropriating money for his investigations.[1]

The CHAIRMAN. Mr. Berge, have you read Mr. Jewett's testimony before this subcommittee?

Mr. BERGE. I'm sorry, Senator, I have not.

The CHAIRMAN. In that testimony, as I recollect it—and I am speaking purely from memory—he describes the telephone corporate set-up and organization. He describes it as a public-service company, built up to give service to the public, and he describes its subdivisions, its research organization, its manufacturing organization, and its service companies and the method in which they are handled. I believe if you would analyze that testimony in comparison with Senate bill 702, you would find that Senate 702 parallels the organization of that group of companies to a large extent. In his testimony he stated that in his opinion the organizational set-up in that group of companies was an ideal organization of a public corporation, similar to a governmental organization whose purpose was to sell service to the people, and not to sell products to the people. Of course, that is the purpose of government, to sell service; we don't sell products.

Mr. BERGE. That is very interesting.

The CHAIRMAN. Please go ahead.

Mr. BERGE. I am going to speak briefly about the conflicting loyalties which the cartelization of industry brings about.

The CHAIRMAN. May I interrupt you at that point for a moment, Mr. Berge? Do you have in your mind a definition of the word "cartel"? It has been used so much in the newspapers; we hear it so much that I should like to have a comprehensive definition of a cartel. I know the old definition and I have a general understanding of the new one, but I should like the record to show the definition of the word "cartel" as it is used by American corporations.

Mr. BERGE. I think that this definition will suffice for our discussion and, of course, there are different notions on the parts of differ-

[1] Exhibit No. 143 on p. 935.

Digitized by Google

ent people as to what a cartel is, but I think this is a good generalized statement of it: In its simplest form, a cartel is an international combination or agreement between domestic and foreign monopoly groups which fixes prices, divides market territory and fields of production. In general, domestic concerns which dominate a national market enter into cartel agreements to prevent any possibility of competition. In other words, it is an international combination or agreement of monopolies. As we use the word, it is monopoly in an international field and the constituent members of the cartel are usually monopolies themselves within their domestic domains.

The CHAIRMAN. It amounts to a trade treaty without governmental participation?

Mr. BERGE. A private trade treaty without public ratification.

Mr. SCHIMMEL. How does that affect technology, as a rule, Mr. Berge?

Mr. BERGE. Of course, that calls forth, really, a good deal of discussion, and it will come out, I think, as we go along, both in this and in subsequent hearings; but I think, in general, if the monopoly controls an industry, the criterion as to whether particular inventions shall be advanced or not is largely profit, whether or not it is in the monopolistic interest to push the development forward. If you had, on the contrary, a competitive situation, no monopoly could control or suppress the development of technology, because if it didn't go ahead with it, others would. That might raise the question in the minds of some, "How could others go ahead with it if the competitor had the patent?" Of course, the answer to that would be that under a licensing system all comers who are ready, willing, and able to go ahead with the development could secure a license to use it at a reasonable royalty, if the holder of the patent did not desire to develop the product. But where you have monopoly control of an industry and of the patents, the private interest of the monopoly, rather than the public interest in technological advancement, determines whether the thing shall be developed or not. When you extend that to the international scale, nationalistic considerations come in. If you have the monopoly of one country assigning to a monopoly of another, its brother member of the cartel, the patents which have been developed at home, that means they become available for development for use in the other country, according to the terms of the licensing arrangement or the terms of the cartel agreement, which often provide that the developments can't be advanced in the respective countries of the members without joint approval of the respective members. Translated to more concrete terms, that means that an American company belonging to a cartel may be restricted to manufacturing products under its patents at home without the permission or consent of the foreign member. Of course, the details of the various agreements vary, but I think as we go along specific cases will reveal how technology at home has been restricted or stopped in certain industries because we were bound by agreements with German companies and by companies in other countries.

The CHAIRMAN. Isn't it a fact also that cartels compel American companies to disseminate information abroad, and that at the conclusion of the war inventions of vast strategic value will be available

Digitized by Google

to nations that may use those inventions against us at some future time?

Mr. BERGE. Precisely. That has happened in a number of cases, and often the effect of the agreement, as our companies have entered into it, is that the foreign countries are free to go ahead with the inventions while we are not. At least they do go ahead, sometimes perhaps in violation of their agreements, while our companies scrupulously observe theirs to the detriment of our national interest. I am going to show how that conflict has occurred.

A member of a monopoly or cartel group all too often finds itself in a position where it must choose between the national interest on the one hand and its cartel obligations on the other. This difficulty is accurately stated in a document taken from the Standard Oil Co. (New Jersey) files with reference to the development of 100-octane gasoline, one of the most vital materials of modern warfare. I quote from the document:

> This possibility is, of course, extremely attractive to the Army Air Corps, but there is one difficulty involved which Mr. Russell quite frankly discussed. The hydrogenation development originated in Germany, and through cooperation all around has now passed into the hands of the oil industry of the entire world, and to a certain extent, into the hands of the foreign chemical industry as well. There is a full and free exchange of technical information between all of the companies and units involved in the hydrogenation development and this exchange is not only by means of reports but by constant visits of technical men. To cut off these reports and shut our hydrogenation plants against these visitors would be not only a violation of these agreements, which would involve us in many difficulties, but would also be tantamount to a confession that we were engaged in some work of special military value which would mean that the plants would become a focal point for espionage. The costs and difficulties of protecting against leakage of information about large commercial operations under such conditions is hard to estimate. *It seems that the only practical way to handle this problem is to avoid carrying out the operation of producing 100-octane number aviation gasoline commercially as long as possible.* We would, of course, also have to breach our agreements to render full and complete technical reports to all of the companies associated with us (even to the American companies, for fear of leakage). We should also forfeit the advantage in producing at the least cost the best available gasoline for commercial purposes.
>
> *Any program by which the Army Air Corps can obtain their objective of a 1- or 2-year start over the rest of the world on this vital matter bristles with difficulties and sacrifices from our standpoint.* We will not have to cross the bridge finally until our present experiments are completed. When and if we are able to demonstrate that the hydrogenation plants are capable of turning out an aviation product which with the usual quantity of lead can be brought up to the 100-octane number, we shall be faced with the situation mentioned above. *To meet the very proper desires of the Air Corps as expressed to us we shall have to violate our agreements and perhaps forfeit the confidence of our associates, both American and foreign, and beyond this we shall either have to avoid any commercial use of the new method or run the very grave risk of finding that our efforts at secrecy have been abortive.* [Italics supplied.] [1]

The CHAIRMAN. That was contained in a communication in the files of Standard Oil Co., in explaining their actions several years before the war?

Mr. BERGE. That's right.

The CHAIRMAN. Mr. Arnold made a supplementary statement for the Truman commitee last year which showed that German technologists were sent to this country to get all possible information for constructing aviation-gasoline plants immediately prior to the invasion of Poland and the outbreak of the war. As I recall it, these men were

[1] Arnold exhibit No. 75, p. 4916, pt. 11, Hearings of the Special Senate Committee Investigating the National Defense Program, 1942.

Digitized by Google

welcomed into the laboratories and designing rooms of Standard Oil of New Jersey and its affiliates and given full information. In connection with the documents which revealed these facts, did you find any indication that this program of disclosure of information was brought to the attention of our Air Corps and their approval secured in advance?

Mr. BERGE. Our documents do not show any disclosure of that information to the Air Corps. I would be amazed if the Air Corps, knowing it, would have permitted it. We have no reason to think they knew it.

The CHAIRMAN. The hydrogenation process is the process where you can take petroleum and bring it to a high octane content cheaply and rapidly, and that would increase our production of aviation gasoline tremendously?

Mr. BERGE. Yes; I think so. There may be more to the process than that. I am not very familiar with the technical, scientific implications. Mr. Borkin may supplement that.

Mr. JOSEPH BORKIN (economic adviser on cartels and patents, Antitrust Division, Department of Justice). It is also the process where you make gasoline out of coal and that was an additional use.

The CHAIRMAN. But you could take petroleum, and by the incorporation of hydrogen at high temperature and high pressure, raise the octane content of the gasoline tremendously?

Mr. BERGE. That's right.

Dr. ROBERT M. HUNTER (Special Assistant to the Attorney General). Might I suggest something? You used the word "cheaply" in connection with this. I don't believe this can be characterized as a cheap process.

The CHAIRMAN. It is not cheap in money, but it is cheap in natural resources. At the present time we are having difficulty with our petroleum resources in getting the necessary materials to raise gasoline to 100-octane rating without the use of the hydrogenation process.

Mr. SCHIMMEL. Mr. Berge, doesn't your testimony show that the Standard Oil Co. was unwilling to go ahead with a commerical program of 100-octane gasoline?

Mr. BERGE. They felt that there was danger under the agreements which they had with these foreign companies.

Mr. SCHIMMEL. Who were these foreign companies?

Mr. BERGE. I. G. Farbenindustrie.

Mr. SCHIMMEL. Did I. G. find it so difficult?

Mr. BERGE. I think they closed the door to us.

Mr. SCHIMMEL. Did I. G. enter into the commercial production of aviation gasoline which the Standard Oil Co. found so difficult?

Dr. HUNTER. A very large part of the gasoline of Germany was prepared in these hydrogenation plants of I. G.

Mr. BERGE. In pointing out the inevitable conflicts between national loyalties and business interests which arise when industry is carried on through private international cartel agreements, I do not attack, nor do I intend to cast inferences against, the patriotic motives of any men or companies. I shall assume that the persons who have taken part in these international transactions to which I am going to allude have not consciously acted against the best interests of their country. But it is the cartel system that is at fault—a system of con-

Digitized by Google

ducting international business on the basis of international restraint of trade in the interest of private groups. The individuals caught up in the system are faced with a dilemma because it imposes on them choices which it is almost impossible to make without violation of an obligation to one of two conflicting interests.

The CHAIRMAN. Isn't it a fact that our companies, private corporations and not Government controlled, are dealing with governmental monopolies abroad in entering into this cartel agreement, thereby placing our private companies at the mercy of the Government decisions abroad, in case of an international crisis?

Mr. BERGE. I think, generally speaking, that is the way it works out.

The CHAIRMAN. And our people, being honorable business people, do not realize that the Government abroad may change the complexion and character of the corporations with which they are dealing.

Mr. BERGE. I think that's true.

One of the most serious limitations upon research has been the division of fields of technology by cartel groups. If a company is barred by agreement from an aspect of technology, there is little if any incentive to do research in that field. One possible consequence of such division of technology is that it permits foreign interests to exercise influence amounting to domination over research in this country.

No one doubts that synthetic rubber is a matter of national interest. The cartel arrangement between Standard Oil Co. (New Jersey) and I. G. Farbenindustrie was such that the latter dominated the development of synthetic rubber in this country as well as in Germany. I understand that your committee has caused the 10 volumes of Senate Patent Committee Hearings to be condensed into one volume.[1] In the story of synthetic rubber in that volume you will find clear evidence of the working of this arrangement and of the manner in which technology in this country was hampered as a result of it.

The CHAIRMAN. Mr. Berge, I want to invite your attention to Newsweek of September 27, 1943, and to call your particular attention to an article by Ralph Robey. Have you read that article?

Mr. BERGE. I haven't read it, Senator; no.

The CHAIRMAN. The article attacks the Vice President for alleged campaign of disunity, and it says:

> The particular cause of the Vice President's wrath is an agreement made by Standard during the twenties with I. G. Farbenindustrie of Germany, by which Standard, at a cost of about $35,000,000, obtained a part interest in certain patents held by Farben. It was not a "secret" agreement, as Mr. Wallace says. On the contrary it was widely covered by the press at the time. What is important is the following:

And it lists several items, including the following:

> 4. As a result of this agreement we got buna rubber—which is the basis of our synthetic-rubber program—and thereby had a chance to experiment with what could be done with it. Former Rubber Director Jeffers said last June that as a result of this experimentation our synthetic-rubber program is a year and a half further ahead than it otherwise would be.

What do the files in your office disclose with reference to the statements made by Mr. Robey in that article as to the development of

[1] Pt. 4, Hearings of the Subcommittee on War Mobilization of the Senate Committee on Military Affairs, 1943.

Digitized by Google

buna rubber and whether or not its development was advanced, or was it actually delayed, as far as you are concerned?

Mr. BERGE. I think Dr. Hunter is more familiar with that matter than I am.

Dr. HUNTER. I read the article and I think the Vice President's statement that Mr. Robey was criticizing undoubtedly had taken into consideration testimony which I gave before the Senate Patents Committee. I was allowed to see what purported to be all of the documents pertaining to buna and butyl ruber in the Standard Oil Co. files. In my testimony before the Patents Commitee I introduced every document which I thought had a pertinent bearing on the relationship between I. G. Farben and Standard Oil Co. of New Jersey, with reference to synthetic rubber. This statement that is quoted and that you read, "As a result of this agreement we got buna rubber." I think needs some explanation.

The agreement that was publicized at the time—never publicized in full, but publicity was given to it—was one which concerned the turning over to Standard Oil, or to Standard-I. G. Co., a subsidiary corporation, the hydrogenation patents for exploitation throughout the world.

The CHAIRMAN. Those hydrogenation patents were American, were they not?

Dr. HUNTER. American patents on file in the American patent office.

The CHAIRMAN. And on which they now base their aviation fuel program in Germany; isn't that the fact?

Dr. HUNTER. That's right. The hydrogenation agreement was only one of a series of four agreements executed at the same time. The other three were not given publicity at all. When Mr. Robey says that this was not a secret agreement, he's referring to the division of fields agreement, which Vice President Wallace mentioned, and that was a secret agreement and remained so until the Antitrust Division found it in the files and made it public.

The CHAIRMAN. Wasn't it also a fact that in that cartel, with reference to rubber, progress was retarded in this country because, under the cartel agreement, Standard had to get permission of I. G. Farben before they could release any of these patents, or any of these processes in the United States?

Dr. HUNTER. Before they could do anything toward exploiting buna rubber in this country.

The CHAIRMAN. Whereas the I. G. could go ahead and exploit hydrogenation processes in Germany without consulting Standard.

Dr. HUNTER. That's true. The statement that we got buna rubber from this agreement needs to be read in the light of this situation: In the fall of 1939, just after the outbreak of the war, Dr. M. B. Hopkins was placed in charge of the synthetic-rubber program for Standard Oil Co. A memorandum, which is in the Truman committee hearings, reports a conference which he had on October 18 or 19 with Dr. P. K. Frolich, now president of the American Chemical Society, who was then and is now head of the Chemical Division of Esso Laboratories of Standard of New Jersey. In reporting this discussion with Dr. Frolich, Dr. Hopkins said: "Our people have never made buna, but the chemical laboratories are starting experiment." This is in the fall of 1939, after the deal at The Hague, in which Standard was permitted to go ahead in this country. The memorandum continues:

Digitized by Google

The development division has assembled data, largely from patents which are sufficient to make preliminary estimates possible. The I. G. has not furnished anyone technical information, although Mr. Murphrey walked through one of the plants several years ago.[1]

The next day, on October 20, Dr. Hopkins reported to his superior, Mr. Frank Howard, president of Standard Development Co., as follows:

DEAR MR. HOWARD: You asked about the amount of technical information available on the manufacture of buna rubber. Excepting the information Mr. Murphrey was able to get when he went through an I. G. plant 8 years ago—

that was in 1931—

the only knowledge our people have is derived from published patents.[2]

It was testified before the Patents Committee, and is unquestionably the fact, that no information was obtained—no technical information was obtained—concerning buna rubber after the outbreak of the war. I quoted you these statements from the Standard files indicating they got no information prior to October 1939. I have made the statement that they got no information subsequent to that time from Germany, except what was contained in the published patents which any person could have obtained by going to the Patent Office. Therefore, when the statement is made that we got buna rubber from I. G. as a result of that agreement, what it really amounts to is this: Standard Oil got the right to sue anybody for infringement of these American patents which had formerly been held by I. G. Farben, and which they threatened to do and actually did do, about 6 or 8 weeks before Pearl Harbor, in suing a subsidiary of B. F. Goodrich Co. for infringement of the buna patents.

The CHAIRMAN. In other words, the patent does not contain the know-how with which to manufacture?

Dr. HUNTER. Definitely not. It very definitely does not contain all the information that is necessary to go ahead. In connection with these synthetic-rubber patents, Standard Oil, on its own hook, did develop know-how, but they said themselves that all they got was the buna patents, so far as I. G. Farben was concerned.

The CHAIRMAN. But the real know-how for making buna was developed in this country by Standard without assistance from Farben?

Dr. HUNTER. That is what the statements say and the man who made the statements was the man in charge of synthetic-rubber development for Standard Oil.

The CHAIRMAN. In the language of the country lawyer, Standard got the right to bring a lawsuit, whereas Farben had a process which they could use.

Dr. HUNTER. Also, a year and a half prior to this, in the spring of 1938, Standard had given full disclosure as to how to make butyl rubber, and samples of it, to the I. G. Farben people, who, at that time, were working directly under the Hitler government.

The CHAIRMAN. Isn't it also the fact that not only cartel proceedings in the courts were required but also public hearing before the

[1] Arnold exhibit No. 18, p. 4858, pt. 11, Hearings of the Special Senate Committee Investigating the National Defense Program, 1942.
[2] Arnold exhibit No. 19, Ibid.

Digitized by Google

Truman committee before we could get the rubber patents into the production process?

Dr. HUNTER. I think that's a fair statement.

Mr. SCHIMMEL. Dr. Hunter, did those documents show whether a greater amount of research on buna-type rubber was being done in Germany than in America?

Dr. HUNTER. Unquestionably more of it had been done by I. G. Farben and its associates and the other companies in Germany than had been done in the Standard Oil set-up in this country. Now, if you mean were any companies in this country engaged in research, the answer is "Yes." Goodrich and Goodyear for years were engaged in very exhaustive research in attempting to develop the buna-types of rubber, and were trying all through those years, from 1931 to and after the outbreak of war, to get the permission of Standard Oil and I. G. Farben to participate in the development and exploitation of buna-type rubber that Farben developed, but they had no success; that is, the efforts to get participation were without success.

Mr. SCHIMMEL. Did any of these companies hold up their research in the hope they would be able to get technical information from the German companies according to the agreements you refer to?

Dr. HUNTER. I can't say whether they held up their research; I do know they were anxious to get whatever assistance they could from Standard Oil and I. G., and weren't able to get it.

The CHAIRMAN. Isn't it true that butyl was an American development?

Dr. HUNTER. That's right.

The CHAIRMAN. And that it was furnished quite freely to Germany while Farben at the same time was withholding from Standard the know-how on buna?

Dr. HUNTER. That's right.

The CHAIRMAN. Under the cartel butyl was a problem to get into development, although it was needed for gas masks and for various other necessary purposes, including inner tubes.

Dr. HUNTER. That's right.

The CHAIRMAN. Mr. Berge, will you please go ahead. I'm sorry for so many interruptions.

Mr. BERGE. In the case of the Bausch & Lomb-Zeiss cartel on military optical glass, the heads of the Bausch & Lomb department responsible for military research were to be appointed only with the agreement of Carl Zeiss of Jena, Germany. This is provided for in a contract dated December 24, 1926, which stated:

> In furtherance of the aims of this agreement, the Bausch & Lomb Optical Co. in Rochester will create a new department responsible solely to the board of directors, which is charged with the independent development of all scientific and technical tasks within the military scope and the maintenance of associations with the firm of Carl Zeiss in Jena. The parties will come to an agreement as regards the heads to be placed in charge of this department.

The CHAIRMAN. Mr. Berge, as I recall, there was a shortage of field glasse in the United States at the outbreak of this war and private citizens were asked to donate their filed glasses that we might get lenses for use by our Army and Navy in combat. This situation was brought about because of the failure of the development and production of an American company—Bausch & Lomb?

Digitized by Google

Mr. SCHIMMEL. Is Bausch & Lomb an American company or a German company?

Mr. BERGE. An American company in Rochester, N. Y.; Zeiss is the German company.

Mr. SCHIMMEL. But the German company dictated the research personnel of the American company?

Mr. BERGE. As I understand it, Mr. Schimmel, the German company had a veto power over who was to conduct research in our country.

In regard to the cartel involving Plexiglas, probably one of the most important plastics, and one which has innumerable military uses, the Röhm & Haas Co. of Philadelphia, a member of this cartel, stated:

> * * * we could think of a price agreement on the finished product, or a division of our interests. I told him we have not only our own interests at stake but also the ones of our German house (Rohm & Haas of Darmstadt, Germany) and the I. G.

The CHAIRMAN. Do you have anything in your records with reference to the connection between Röhm & Haas of Philadelphia and Röhm & Haas of Darmstadt?

Mr. BERGE. Yes. Mr. Borkin will explain that.

Mr. BORKIN. Before the First World War—in fact, during the early part of the twentieth century—Röhm and Haas formed a partnership to exploit certain chemical processes in Germany. After a time, Mr. Haas came to the United States and formed a company here, also called Röhm & Haas, on the same basis as the German company was owned, or 50 percent each by Röhm and Haas. When the war broke out, that is, the First World War, the Alien Property Custodian seized the half owned by Dr. Röhm, so that we had the situation where the Alien Property Custodian and Haas owned the company. The Alien Property Custodian sold it to a chemical tanning firm of Chicago and after a few gyrations the ownership of that stock came back to Mr. Haas and then to Dr. Röhm, so that at the opening of this war it stood at the same position, practically, that it did at the start of the First World War, and I understand in this war again the Alien Property Custodian has seized a portion of the stock.

The CHAIRMAN. Plexiglas is the clear substance we used in the noses, sides, and tails of our planes?

Mr. BORKIN. It has a great advantage over glass because it is lighter and clearer.

The CHAIRMAN. And it is not subject to fragmentation; isn't that right?

Mr. BORKIN. That's right.

Mr. BERGE. To mention another one, the second largest producer of tungsten carbide, an essential machine tool ingredient, has testified, and I quote:

> The control of the tungsten carbide patents by the General Electric Co. and the Krupp Co. has resulted in keeping the prices at exorbitant levels. Now when the emergency has come, industry has not learned how to use tungsten carbide and has not the machines, the skilled men, or the technique which it would have had if the material had been available at the same low prices at which it was available to German industries.[1]

[1] Lewin exhibit No. 3, p. 219, pt. 1, Hearings of the Senate Committee on Patents, 1942.

Digitized by Google

The CHAIRMAN. Do you recall the differences in those prices?

Mr. BERGE. Roughly, yes. I think it was around $50 in Germany and as high as $453 in the United States.

The CHAIRMAN. For the same substance?

Mr. BERGE. For the same substance; yes.

In December 1934 a high official of the du Pont Co. wrote to E. W. Webb, president of the Ethyl Corporation, with copies to every member of its board of directors, as follows:

I learned through our Organic Chemicals Division today that the Ethyl Gasoline Corporation has in mind forming a German company with the I. G. to manufacture ethyl lead in that country.

I have just had 2 weeks in Washington, no inconsiderable part of which was devoted to criticizing the interchanging with foreign companies of chemical knowledge which might have a military value. Such giving of information by an industrial company might have the gravest repercussions on it. The Ethyl Gasoline Corporation would be no exception, in fact, would probably be singled out for special attack because of the ownership of its stock.

It would seem, on the face of it, that the quantity of ethyl lead used for commercial purposes in Germany would be too small to go after. It has been claimed that Germany is secretly arming. Ethyl lead would doubtless be a valuable aid to military airplanes.

I am writing you this to say that in my opinion under no conditions should you or the board of directors of the Ethyl Gasoline Corporation disclose any secrets or "know-how" in connection with the manufacture of tetraethyl lead to Germany.[1]

Yet, in the face of this warning from du Pont, on January 12, 1935, Webb wrote the Chief of the Army Air Corps that—

There is no technical data of military importance known to us which would be involved in the building of such a plant that has not already received wide publicity, or is of common knowledge in the aviation field.[2]

This statement strikingly ignores the warning received from du Pont only 1 month earlier that such a disclosure would "doubtless" be prejudicial to our national security. In this connection it should not be overlooked that du Pont and Dow were the sole producers of the chemical components of tetraethyl lead and, as such, were the concerns which alone possessed the essential know-how.

Why did Ethyl Gasoline disregard du Pont's warning? Webb himself has supplied the answer in the final paragraph of the statement of facts accompanying his letter of January 12, 1935, mentioned above. He frankly stated that—and I quote:

There is, furthermore, an equally, if not more, important business aspect to the German situation. We are owned by the Standard Oil Co. (New Jersey) and General Motors Corporation in equal shares. General Motors has important investments in Germany, producing there in excess of 50 percent of the motor cars. Standard Oil (New Jersey) has large investments in all phases of the petroleum business in Germany. * * * We feel * * * for the reasons specifically mentioned here, that it would be extremely unfortunate for all concerned if we do not proceed to carry out the agreement with I. G. * * * A refusal or undue delay on our part * * * might bring on some serious reprisal measures.[2]

This leaves nothing for surmise. It is not unfair to conclude, in view of these facts, that for the directors of Ethyl Gasoline the preservation of I. G. goodwill conflicted with the maintenance of good faith in dealings with their own Government. Though du Pont, from the beginning, was opposed to the entire deal on grounds of patriotic

[1] Exhibit No. 144 on p. 939.
[2] Exhibit No. 145 on p. 939.

Digitized by Google

The development division has assembled data, largely from patents which are sufficient to make preliminary estimates possible. The I. G. has not furnished anyone technical information, although Mr. Murphrey walked through one of the plants several years ago.[1]

The next day, on October 20, Dr. Hopkins reported to his superior, Mr. Frank Howard, president of Standard Development Co., as follows:

DEAR MR. HOWARD: You asked about the amount of technical information available on the manufacture of buna rubber. Excepting the information Mr. Murphrey was able to get when he went through an I. G. plant 8 years ago—

that was in 1931—

the only knowledge our people have is derived from published patents.[2]

It was testified before the Patents Committee, and is unquestionably the fact, that no information was obtained—no technical information was obtained—concerning buna rubber after the outbreak of the war. I quoted you these statements from the Standard files indicating they got no information prior to October 1939. I have made the statement that they got no information subsequent to that time from Germany, except what was contained in the published patents which any person could have obtained by going to the Patent Office. Therefore, when the statement is made that we got buna rubber from I. G. as a result of that agreement, what it really amounts to is this: Standard Oil got the right to sue anybody for infringement of these American patents which had formerly been held by I. G. Farben, and which they threatened to do and actually did do, about 6 or 8 weeks before Pearl Harbor, in suing a subsidiary of B. F. Goodrich Co. for infringement of the buna patents.

The CHAIRMAN. In other words, the patent does not contain the know-how with which to manufacture?

Dr. HUNTER. Definitely not. It very definitely does not contain all the information that is necessary to go ahead. In connection with these synthetic-rubber patents, Standard Oil, on its own hook, did develop know-how, but they said themselves that all they got was the buna patents, so far as I. G. Farben was concerned.

The CHAIRMAN. But the real know-how for making buna was developed in this country by Standard without assistance from Farben?

Dr. HUNTER. That is what the statements say and the man who made the statements was the man in charge of synthetic-rubber development for Standard Oil.

The CHAIRMAN. In the language of the country lawyer, Standard got the right to bring a lawsuit, whereas Farben had a process which they could use.

Dr. HUNTER. Also, a year and a half prior to this, in the spring of 1938, Standard had given full disclosure as to how to make butyl rubber, and samples of it, to the I. G. Farben people, who, at that time, were working directly under the Hitler government.

The CHAIRMAN. Isn't it also the fact that not only cartel proceedings in the courts were required but also public hearing before the

[1] Arnold exhibit No. 18, p. 4858, pt. 11, Hearings of the Special Senate Committee Investigating the National Defense Program, 1942.
[2] Arnold exhibit No. 19, Ibid.

Digitized by Google

Truman committee before we could get the rubber patents into the production process?

Dr. HUNTER. I think that's a fair statement.

Mr. SCHIMMEL. Dr. Hunter, did those documents show whether a greater amount of research on buna-type rubber was being done in Germany than in America?

Dr. HUNTER. Unquestionably more of it had been done by I. G. Farben and its associates and the other companies in Germany than had been done in the Standard Oil set-up in this country. Now, if you mean were any companies in this country engaged in research, the answer is "Yes." Goodrich and Goodyear for years were engaged in very exhaustive research in attempting to develop the buna-types of rubber, and were trying all through those years, from 1931 to and after the outbreak of war, to get the permission of Standard Oil and I. G. Farben to participate in the development and exploitation of buna-type rubber that Farben developed, but they had no success; that is, the efforts to get participation were without success.

Mr. SCHIMMEL. Did any of these companies hold up their research in the hope they would be able to get technical information from the German companies according to the agreements you refer to?

Dr. HUNTER. I can't say whether they held up their research; I do know they were anxious to get whatever assistance they could from Standard Oil and I. G., and weren't able to get it.

The CHAIRMAN. Isn't it true that butyl was an American development?

Dr. HUNTER. That's right.

The CHAIRMAN. And that it was furnished quite freely to Germany while Farben at the same time was withholding from Standard the know-how on buna?

Dr. HUNTER. That's right.

The CHAIRMAN. Under the cartel butyl was a problem to get into development, although it was needed for gas masks and for various other necessary purposes, including inner tubes.

Dr. HUNTER. That's right.

The CHAIRMAN. Mr. Berge, will you please go ahead. I'm sorry for so many interruptions.

Mr. BERGE. In the case of the Bausch & Lomb-Zeiss cartel on military optical glass, the heads of the Bausch & Lomb department responsible for military research were to be appointed only with the agreement of Carl Zeiss of Jena, Germany. This is provided for in a contract dated December 24, 1926, which stated:

> In furtherance of the aims of this agreement, the Bausch & Lomb Optical Co. in Rochester will create a new department responsible solely to the board of directors, which is charged with the independent development of all scientific and technical tasks within the military scope and the maintenance of associations with the firm of Carl Zeiss in Jena. The parties will come to an agreement as regards the heads to be placed in charge of this department.

The CHAIRMAN. Mr. Berge, as I recall, there was a shortage of field glasse in the United States at the outbreak of this war and private citizens were asked to donate their filed glasses that we might get lenses for use by our Army and Navy in combat. This situation was brought about because of the failure of the development and production of an American company—Bausch & Lomb?

Digitized by Google

Mr. SCHIMMEL. Is Bausch & Lomb an American company or a German company?

Mr. BERGE. An American company in Rochester, N. Y.; Zeiss is the German company.

Mr. SCHIMMEL. But the German company dictated the research personnel of the American company?

Mr. BERGE. As I understand it, Mr. Schimmel, the German company had a veto power over who was to conduct research in our country.

In regard to the cartel involving Plexiglas, probably one of the most important plastics, and one which has innumerable military uses, the Röhm & Haas Co. of Philadelphia, a member of this cartel, stated:

* * * we could think of a price agreement on the finished product, or a division of our interests. I told him we have not only our own interests at stake but also the ones of our German house (Rohm & Haas of Darmstadt, Germany) and the I. G.

The CHAIRMAN. Do you have anything in your records with reference to the connection between Röhm & Haas of Philadelphia and Röhm & Haas of Darmstadt?

Mr. BERGE. Yes. Mr. Borkin will explain that.

Mr. BORKIN. Before the First World War—in fact, during the early part of the twentieth century—Röhm and Haas formed a partnership to exploit certain chemical processes in Germany. After a time, Mr. Haas came to the United States and formed a company here, also called Röhm & Haas, on the same basis as the German company was owned, or 50 percent each by Röhm and Haas. When the war broke out, that is, the First World War, the Alien Property Custodian seized the half owned by Dr. Röhm, so that we had the situation where the Alien Property Custodian and Haas owned the company. The Alien Property Custodian sold it to a chemical tanning firm of Chicago and after a few gyrations the ownership of that stock came back to Mr. Haas and then to Dr. Röhm, so that at the opening of this war it stood at the same position, practically, that it did at the start of the First World War, and I understand in this war again the Alien Property Custodian has seized a portion of the stock.

The CHAIRMAN. Plexiglas is the clear substance we used in the noses, sides, and tails of our planes?

Mr. BORKIN. It has a great advantage over glass because it is lighter and clearer.

The CHAIRMAN. And it is not subject to fragmentation; isn't that right?

Mr. BORKIN. That's right.

Mr. BERGE. To mention another one, the second largest producer of tungsten carbide, an essential machine tool ingredient, has testified, and I quote:

The control of the tungsten carbide patents by the General Electric Co. and the Krupp Co. has resulted in keeping the prices at exorbitant levels. Now when the emergency has come, industry has not learned how to use tungsten carbide and has not the machines, the skilled men, or the technique which it would have had if the material had been available at the same low prices at which it was available to German industries.[1]

[1] Lewin exhibit No. 3, p. 219, pt. 1, Hearings of the Senate Committee on Patents, 1942.

Digitized by Google

The CHAIRMAN. Do you recall the differences in those prices?

Mr. BERGE. Roughly, yes. I think it was around $50 in Germany and as high as $453 in the United States.

The CHAIRMAN. For the same substance?

Mr. BERGE. For the same substance; yes.

In December 1934 a high official of the du Pont Co. wrote to E. W. Webb, president of the Ethyl Corporation, with copies to every member of its board of directors, as follows:

I learned through our Organic Chemicals Division today that the Ethyl Gasoline Corporation has in mind forming a German company with the I. G. to manufacture ethyl lead in that country.

I have just had 2 weeks in Washington, no inconsiderable part of which was devoted to criticizing the interchanging with foreign companies of chemical knowledge which might have a military value. Such giving of information by an industrial company might have the gravest repercussions on it. The Ethyl Gasoline Corporation would be no exception, in fact, would probably be singled out for special attack because of the ownership of its stock.

It would seem, on the face of it, that the quantity of ethyl lead used for commercial purposes in Germany would be too small to go after. It has been claimed that Germany is secretly arming. Ethyl lead would doubtless be a valuable aid to military airplanes.

I am writing you this to say that in my opinion under no conditions should you or the board of directors of the Ethyl Gasoline Corporation disclose any secrets or "know-how" in connection with the manufacture of tetraethyl lead to Germany.[1]

Yet, in the face of this warning from du Pont, on January 12, 1935, Webb wrote the Chief of the Army Air Corps that—

There is no technical data of military importance known to us which would be involved in the building of such a plant that has not already received wide publicity, or is of common knowledge in the aviation field.[2]

This statement strikingly ignores the warning received from du Pont only 1 month earlier that such a disclosure would "doubtless" be prejudicial to our national security. In this connection it should not be overlooked that du Pont and Dow were the sole producers of the chemical components of tetraethyl lead and, as such, were the concerns which alone possessed the essential know-how.

Why did Ethyl Gasoline disregard du Pont's warning? Webb himself has supplied the answer in the final paragraph of the statement of facts accompanying his letter of January 12, 1935, mentioned above. He frankly stated that—and I quote:

There is, furthermore, an equally, if not more, important business aspect to the German situation. We are owned by the Standard Oil Co. (New Jersey) and General Motors Corporation in equal shares. General Motors has important investments in Germany, producing there in excess of 50 percent of the motor cars. Standard Oil (New Jersey) has large investments in all phases of the petroleum business in Germany. * * * We feel * * * for the reasons specifically mentioned here, that it would be extremely unfortunate for all concerned if we do not proceed to carry out the agreement with I. G. * * * A refusal or undue delay on our part * * * might bring on some serious reprisal measures.[2]

This leaves nothing for surmise. It is not unfair to conclude, in view of these facts, that for the directors of Ethyl Gasoline the preservation of I. G. goodwill conflicted with the maintenance of good faith in dealings with their own Government. Though du Pont, from the beginning, was opposed to the entire deal on grounds of patriotic

[1] Exhibit No. 144 on p. 939.
[2] Exhibit No. 145 on p. 939.

Digitized by Google

scruples, nevertheless it eventually deferred. In an interoffice memo of the du Pont Co. appears the following:

* * * I think we should tell I. C. I.—

that is, the Imperial Chemicals of England—

that the technical and engineering information which we are giving I. G. in connection with tetraethyl lead is being given them entirely at the request of the Ethyl Gasoline Corporation. As they no doubt know, Ethyl Gas and I. G. set up some arrangements whereby they are going to participate jointly in the manufacture and sale of ethyl lead in Germany and we are turning over our information to Ethyl Gas which they in turn can submit to I. G. as part of the bargain in connection with this joint enterprise.[1]

The CHAIRMAN. Now, Mr. Berge, do I understand that an American corporation and I. G. Farben were joint owners of the plants for making tetraethyl gasoline, for making aviation gasoline for use by the Luftwaffe, and that that is what is enabling them to continue the fight in Germany?

Mr. BERGE. It's certainly one of the things; yes, sir.

I offer this chart for the record.

(The chart referred to was received in evidence and marked "Exhibit No. 154" and was held in committee files.)

Dr. HUNTER. Mr. Senator, that chart shows the rather complicated arrangement that has been worked out, by which American and British interests participated in ownership with I. G. in Germany in the tetraethyl lead production facilities of Germany. An American company, called the Forak Co., is the direct participant.

Mr. BERGE. Even the admonitions of the War Department sometimes have little effect upon a cartel member when the latter finds itself torn between national duty on the one hand and cartel obligations on the other. In a letter of July 9, 1929, from the Bausch & Lomb Optical Co. in Rochester, N. Y., to its German associate, appears the following:

Heretofore, the Government has merely been insistent that none of the details as regards the designs of these instruments be made public, but lately it seems as if the quantities, prices, etc., and the amount of the equipment purchased, etc., are also considered secret. Obviously, our agreement with Messrs. Carl Zeiss cannot work satisfactorily unless, at least the latter information, becomes common knowledge to both parties, but some arrangements must be made whereby we are assured this information will be kept in strictest confidence.

The statement accompanying this letter covers deliveries during the months mentioned of various articles such as antiaircraft range finders, 26½-foot range finders, periscopes, and telescopes.

The CHAIRMAN. Now, that was given directly to Germany; military information of the United States was given directly to Germany through a manufacturing company manufacturing war instruments; was it not?

Mr. BERGE. That's right.

The full extent of the dilemma in which cartel members are placed by the conflict of their cartel commitments with national interest is indicated in two statements made by a representative of one of the

[1] Exhibits Nos. 146, 147, 148 on pp. 942, 943, 944.

Digitized by Google

world's great industrial combines. In a letter written in 1939 after the outbreak of war it is stated:

> Pursuant to these arrangements I was able to keep my appointments in Holland, where I had 3 days of discussion with the representatives of the I. G. They delivered to me assignments of some 2,000 foreign patents and we did our best to work out complete plans for a modus vivendi which would operate through the term of the war, whether or not the United States came in. All of the arrangements could not be completed, but it is hoped that enough has been done to permit closing the most important uncompleted points by cable. It is difficult to visualize as yet just how successful we shall be in maintaining our relations through this period without personal contacts.[1]

Mr. SCHIMMELL. Who wrote that letter?

Mr. BERGE. Frank Howard, president of the Standard Oil Development Co.

The CHAIRMAN. Was that meeting in Holland designed for the purpose of preventing the Alien Property Custodian of the United States seizing these German patents as a war measure?

Mr. BERGE. I don't think it would be unfair to infer that.

The CHAIRMAN. It was a means of getting around the law which makes enemy-owned patents susceptible to seizure by our Government in wartime?

Mr. BERGE. That certainly can be inferred.

The CHAIRMAN. Farben went into Liechtenstein at the outbreak of the war. Liechtenstein has assiduously kept neutral. Farben incorporated a lot of their companies and vested title in the patents to try to prevent seizure by foreign countries—also as a part of their modus operandi.

Mr. BERGE. I think it is also significant that this same representative, Mr. Howard, brilliantly expressed the cartel point of view when he said:

> Upon completion of that agreement, the war intervened because our grouping of interested parties included Americans, British, Dutch, Germans, and the war introduced quite a number of complications. *How we are going to make these belligerent parties lie down in the same bed isn't quite clear as yet.* We are now addressing ourselves to that phase of the problem and I hope we will find some solution.
>
> *Technology has to carry on—war or no war*—so we must find some solution to these last problems. [Italics supplied.][2]

Illustrative of cases exhibiting restrictions on the practical application of technological advances is the limitation imposed upon magnesium production in the United States by the 1931 cartel agreement between the Aluminum Co. of America and I. G. This consortium (called the Alig agreement) was designed to fund all patents and know-how relating to the art of magnesium production and fabrication in a jointly owned company, which directly or through licenses was to exploit these techniques exclusively in the United States and not elsewhere. The Magnesium Development Corporation was formed shortly thereafter for this purpose. One of the provisions of the basic Alig agreement reserved to I. G. the sole right to fix, in its

[1] Exhibit No. 368, p. 4584, pt. 11, Hearings of the Special Senate Committee Investigating the National Defense Program, 1942.
[2] Gibson exhibit No. 169, p. 4135, pt. 7, Hearings of the Senate Committee on Patents, 1942.

Digitized by Google

discretion, the maximum output of magnesium, whether manufactured by Magnesium Development Corporation itself or under license granted for its territory, i. e., the United States, beyond or above 4,000 tons per year. In other words, Alcoa might participate on a 50-50 basis (which represented the relative shareholding of the two parties in Magnesium Development Corporation) in any decision in respect of the amount of magnesium to be produced in this country so long as the output remained less than 4,000 tons annually. But, if it were a question of expansion of capacity beyond 4,000 tons, I. G. alone was to make the decision. This is made clear in a stipulation in the Alig agreement, which reads as follows:

As long as magnesium is produced by any * * * producing company under a license or licenses granted * * * the holders of the I. G. shares in Alig * * * shall have the right to limit the increases in production capacity of every such producing company after the initial contemplated production capacity shall have been reached. The initial contemplated capacity *shall in no case be more than 4,000 tons per annum.*[1]

The CHAIRMAN. In other words, even though our needs might be the greater, we had to procure the consent of the Government-controlled I. G. Farben monopoly in Germany before we could increase that production?

Mr. BERGE. Right. We couldn't go above 4,000 tons unless I. G. agreed.

It may be stated almost as a law of their nature that cartels restrict the fullest development of new products, and that they attempt to place rigid handicaps on output. Very often they even adulterate the quality of products in order to exact the greatest possible toll from the public.

Several examples may be used to indicate the practices and mental attitude of monopoly groups in relation to the quality of material. The following quotation concerning flashlight bulbs, speaks for itself:

Two or three years ago we proposed a reduction in the life of flashlight lamps from the old basis on which one lamp was supposed to outlast three batteries, to a point where the life of the lamp and the life of the battery under service conditions would be approximately equal. Sometime ago, the battery manufacturers went part way with us on this and accepted lamps of two battery lives instead of three. This has worked out very satisfactorily.

We have been continuing our studies and efforts to bring about the use of one battery life lamps. I think you will be interested in the attached analysis which Messrs. Prideaux and Egeler have worked up covering the various points involved in going to the one battery life basis. If this were done, we estimate that it would result in increasing our flashlight business approximtely 60 percent. We can see no logical reason either from our standpoint or that of the battery manufacturer why such a change should not be made at this time.

Messrs. Parker and Johnson now have this matter up with the battery manufacturers and I would urge that every assistance be given them to put it over.

The CHAIRMAN. In other words, the agreement was to deteriorate the quality of a flashlight bulb so that when you used up the charge in one battery, everything except the shell became useless and you had to buy a new battery and new lamp and practically rebuild your flashlight.

Mr. BERGE. That's it.

Mr. SCHIMMEL. From what company's files did this correspondence come?

[1] Arnold exhibit No. 13, pp. 1036, 1043, pt. 2, Hearings of the Senate Committee on Patents, 1942.

Digitized by Google

Mr. BERGE. This comes from General Electric.

Although the following plan may not have been placed in actual effect, we can gain some insight into the shocking extremes to which monopolists will even consider going. Methyl methacrylate is the name of one of the best known plastics. It is used not only in the industrial field to make airplane windshielding and many other structural materials, but it also has excellent qualities for the making of dental plates or dentures. As a result of the monopoly control of this material by the du Pont Co. and Röhm & Haas of Philadelphia, its uses were divided into two fields—industrial and dental. At the time these firms were indicted a sharp difference in price was maintained. When methyl methacrylate was sold for industrial purposes, it cost 85 cents a pound, while the price to dental users was $45 a pound. The dental profession soon learned that there was no difference in the material, whether it was designed for industrial or dental use. As a result they began to purchase their requirements from industrial users, in order to gain the advantage of the cheaper industrial price which, we could assume, might possibly be passed on to the dental patient—at least in part.

The monopoly group considered this a form of bootlegging. The Vernon-Benshoff Co., a member of the monopoly clique, made a suggestion in a letter dated March 15, 1940, which I quote below:

> Our discussion of the Pure Food and Drug law and pulling the acrylic denture under it leads me to wonder if the manufacturers of the commercial molding powders might not add an ingredient which would not affect the molding properties, but which would disqualify it under the act—

that is, the Pure Food and Drug Act.

> Apparently a slight trace would suffice. Naturally it would be omitted from the strictly denture powder.
>
> Recently I asked Dr. Johnson to suggest an addition which might interfere with distillation of monomer or retard polymerization. He could not think of anything that wouldn't spoil the molding properties or clarity of the powders. But there the quantity needed to accomplish the result was the handicap.
>
> Under the very finicky regulations of the above act, however, it may be the slightest trace of the right agent, too little to constitute harm to molding (or health either as a matter of fact) would suffice to have bootleg products in bad.
>
> A millionth of 1 percent of arsenic or lead might cause them to confiscate every bootleg unit in the country. There ought to be a trace of something that would make them rear up.[1]

The CHAIRMAN. They were suggesting putting poison into the commercial powders that might possibly endanger human life if used in a denture?

Mr. BERGE. That's right.

The CHAIRMAN. Wouldn't you say they wanted to put the inspectors of the Pure Food and Drug Division to work to see that the dentures were sold at $45 a pound instead of 85 cents a pound?

Mr. BERGE. The effect would have been to make the Food and Drug Act inspectors policemen to enforce the price differentials they were making on this product between commercial and dental users.

The CHAIRMAN. Of course, there would be no factual reason for this price differential?

Mr. BERGE. None that I can see.

---

[1] Exhibit No. 149 on p. 947.

Digitized by Google

The Röhm & Haas Co. said in its reply that they were in agreement with the general principles presented in the letter of the Vernon-Benshoff Co., and that they would turn their research department to work on the matter. This is expressed in a letter of March 21, 1940, to the Vernon-Benshoff Co.

In reference to your letter of March 15th, we shall be glad to investigate whether denture materials come under the Pure Food and Drug Act. We agree with you that if we could put some ingredient in our commercial molding material which would disqualify it under the Pure Food and Drug Act, this would be a very fine method of controlling the bootleg situation. We shall take this matter up with our development department and advise you whether any such material could be used.[1]

The CHAIRMAN. What general type of ingredient would disqualify it under the Pure Food and Drug Act, taking the proper interpretation of the Pure Food and Drug Act?

Mr. BERGE. I am no scientist, but I suppose arsenic certainly would do it, or anything poisonous or injurious.

The CHAIRMAN. Would it have to be something that is injurious to health?

Mr. BERGE. I presume it would because I suppose the object of the Pure Food and Drug Act is to protect health against deleterious substances. If it wasn't of that nature, I suppose it wouldn't contravene the Pure Food and Drug Act.

Mr. SCHIMMEL. The word "bootleg" is used. We usually think of bootlegging as an illegal activity. Was there anything illegal about the dentist using commercial plastics?

Mr. BERGE. Of course not, but the monopolist or cartelist thinks of the maintenance of his artificial price structure as a private law and those who violate that private price structure are, in his view, bootleggers.

The CHAIRMAN. That is the difference between the operation of private law and public law.

Mr. BERGE. Except that they'd like to have the public authorities enforce their private law, whereas the public doesn't expect private police to enforce its laws.

A striking way in which research can be perverted is illustrated by another example. The dyestuffs industry is one which is basically monopolistic and cartelized. A tight grip is maintained over its price structure. This is especially true of dyestuffs for textiles. Recently the du Pont research laboratories developed a pigment which can be utilized either in paints or as a dye for textiles. The du Pont research laboratories considered various ways to be sure that the pigment could be limited in use to the paint and finishing field so as not to disturb the price structure of the textile dyestuffs field. The trend of du Pont's research thought on this subject was stated by the director of one of du Pont's laboratories:

* * * Further work may be necessary on adding contaminants to "Monastral" colors to make them unsatisfactory on textiles but satisfactory for paints.

After working on this problem for some time, the Jackson Laboratory of the du Pont Co. reported its progress on this research problem. Du Pont says of Jackson Laboratory that it is "one of the largest organic chemical research laboratories in the world." This particular

[1] Exhibit No. 150 on p. 947.

Digitized by Google

task was difficult, according to a report by the Jackson Laboratory dated June 26, 1940, from which I quote:

* * * Mr. Chatler was of the opinion that pigment mixtures unsuitable for textile printing would be very difficult to obtain.

(B) The suggestion was made that certain compounds that were white under ordinary conditions but that would be oxidized to give colored bodies when the prints are subjected to chlorine bleach could be used. A few experiments had been made along this line using such compounds as Chlorostain N, dianisidine, and du Pont Oxy Black Base. Complete data on this work are not available. Mr. Dahlen expressed the opinion that the addition of such compounds probably would cause as much or more damage to the paint trade as to textile printing.

Such substances as ground glass and carborundum were suggested for incorporation with the pigment. While these materials would undoubtedly scratch printing rolls, there is considerable doubt as to their effect in paints and lacquers.[1]

Two days later the problem was again attacked at a meeting between the representatives of General Aniline Works and the du Pont Co. Eight possible methods of adulteration were considered. I quote a few from the confidential memorandum of their discussion:

1. A new type of copper phthalocyanine (CPC) for the paint and lacquer trade which would be unsuitable for application on textiles.

* * * * * * *

The importance of solving these problems was recognized and it was agreed that both parties would work on promising ideas which resulted from this discussion. The three problems are closely related and it is possible that the solution of one or two will automatically solve the third. It was agreed that a powder would be the preferable standard. After detailed discussion of various modes of attack, the following appeared to be outstanding:

1. (*a*) Mixtures of CPC with lakes—The most promising mode of attack appears to lie in the formulation of a mixture of CPC with a lake, especially a lake of CPC. Such a mixture should have fairly good fastness to light and *yet be poor in wash fastness on textiles* or incompatible with the usual textile printing lacquers.

* * * * * * *

(*d*) *Deteriorate cotton.*—Compounds might be incorporated into CPC which when applied to textiles and followed by bleaching or heating treatment *might increase the deterioration of the cloth.* Compounds such as chlorates or aliphatic halides which would produce hydrochloric acid were specific examples.

* * * * * * *

(*g*) *Irritating substances.—It is known that certain resins and solvents are irritating to the skin, often causing dermatitis. It might be possible to formulate a CPC composition which will make textile materials irritating to the skin.* [Italics supplied.]

The CHAIRMAN. These great laboratories were seriously considering the possibility of spreading the itch in order to maintain their price structure?

Mr. BERGE. That's right.

The CHAIRMAN. Please go on.

Mr. BERGE. I am continuing to quote:

(*h*) *Incorporation of grit.*—It seemed too dangerous to attempt to add gritty material to CPC since, although it would interfere with the use of the material for textiles, it would also offer serious disadvantages in grinding on application of surface coatings.

It was agreed that the mere dulling of the material would not be a satisfactory solution since dull shades are often used in the textile trade. Most of the above comments were based on work on blue, and many of the solutions would apply equally well to the green. In fact it is believed that there is a larger market for the sale of green than the blue.[2]

[1] Exhibit No. 151 on p. 947.
[2] Exhibit No. 152 on p. 949.

Digitized by Google

So that shows some of the points they were trying to solve in order to maintain the price structure of the pigment used in the painting trade and textile printing.

Mr. SCHIMMEL. Was this discussion and research going on after the national emergency was declared?

Mr. BERGE. June 26, 1940.

Mr. SCHIMMEL. Then this evidence would show that one of the largest organic research companies of the world was concerned with these trivial problems after the national emergency was declared.

Mr. BERGE. That would seem to be correct. These are from memoranda in their files.

I think we must certainly conclude that we cannot afford as a Nation to place our sole reliance upon monopolistic corporations whose interests have only too often been divided, who have sought restricted production rather than full employment of our resources and labor, and who have sought for monopoly control rather than public welfare. We must learn by the bitter lessons of the early years of this war which found us lacking both materials and the know how to make them, resulting from the restrictive practices of monopolies which instinctively seek to produce as little as possible for the greatest profit.

There are those who scoff at all mention of cartels and refer to them as bogies conjured up to justify an attack on all business. Such an attitude is dangerous. Cartels present the greatest challenge to our system of free enterprise. The Antitrust Division is well aware of the difficulties which lie ahead in this connection.

It is fortunate indeed that the present Government of Great Britain may be expected to take a different attitude toward the cartel problem than that which was taken in the days of the appeasers. The peace of Munich has received its full measure of public consideration. Not so well know but of great importance was the peace of Dusseldorf. Unfortunately, this has been the subject of little public comment. It is important to know about the peace of Dusseldorf because it epitomizes the spirit and power of industrial monopoly in the world.

The conference of Dusseldorf took place on March 15 and 16, 1939, immediately after Hitler's invasion of Czeschoslovakia on March 14. The conference consisted of delegates from the Reichsgruppe Industrie of Germany and from the Federation of British Industries. These two groups represent a substantial portion of German and British industry. At the conclusion of the conference the delegates issued the following text of a joint declaration.

The Reichsgruppe Industrie and the Federation of British Industries, having concluded a general discussion on Anglo-German trade relations, issue the following agreed statement:

1. The two organizations welcome the opportunity which these discussions have given of developing still further the friendly relations which have existed between the two bodies for so many years.

* * * * * * *

4. The two bodies are agreed that the objective to be attained is that the export of all countries should be conducted in such a way as to insure a fair return for the producers of those countries. Hence it is agreed that it is essential to replace destructive competition wherever it may be found by constructive cooperation, designed to foster the expansion of world trade, to the mutual benefit of Great Britain, Germany, and all other countries.

Digitized by Google

5. The two organizations are agreed that it is desirable that individual industries in both countries should endeavor to arrive at industrial agreements which will eliminate destructive competition, wherever occuring, but prices must be fixed at such a level as not to diminish the buying power of the consumers.

6. The two organizations realize that agreements upon prices or other factors between Germany and Great Britain are only a step, although a most important step, toward a more ordered system of world trade. They would welcome the participation of other nations in such agreements.

Mr. SCHIMMEL. Mr. Berge, is this an agreement between Great Britain and Germany, or private parties in Great Britain and Germany?

Mr. BERGE. Private parties. I might tell you a little about these two groups. I have here a brief statement:

Reichsgruppe Industrie is the official organization of German industry. Membership is compulsory for all industrial enterprises under the law of 1934. It is one of the seven groups of the German Economic Chamber. The present Reichsgruppe Industrie is the successor to the National Federation of German Industries which existed from 1917 to 1934.

Well, it was, so far as Germany is concerned, a state-sponsored organization.

The CHAIRMAN. It would correspond, shall we say, to N. A. M., if it were compulsory for industry to belong to N. A. M.?

Mr. BERGE. Yes.

The CHAIRMAN. In other words, an association of manufacturers is a voluntary grouping in the United States, but if we passed a law saying every industrial establishment had to belong to that association and elect delegates, we would have something similar to the Reichsgruppe.

Mr. SCHIMMEL. And it would be part of the Department of Commerce.

Mr. BERGE. The British party to this agreement, the Federation of British Industries, is a voluntary organization of large British industrial concerns and trade associations. It is, according to its official pronouncement, the largest association of manufacturers in the world. I shall continue quoting:

8. The two organizations realize that in certain cases the advantages of agreements between the industries of two countries or of a group of countries may be nullified by competition from the industry in some other country that refuses to become a party to the agreement. In such circumstances it may be necessary for the organizations to obtain the help of their governments and the two organizations agree to collaborate in seeking that help.

The CHAIRMAN. What other countries do you suppose these British and German gentlemen were thinking of in that connection?

Mr. BERGE. I certainly don't think that takes much imagination, and moreover it was interpreted expressly in the critical British press to mean us. I can refer here to an extract from the London Economist of that period, in which, after considerable discussion of this agreement, it is stated:

The United States is one country that would be most unlikely to "become a party to the agreement." The clause consequently means that in given circumstances the Federation of British Industries contemplates seeking British Government subsidies to help German trade against American. Is there something in the atmosphere of Dusseldorf that causes sensible men to lose their wits?

Digitized by Google

The CHAIRMAN. In other words, the British press and the British people were not favorable to such an agreement. It was merely a group of industrialists; it was not the attitude of the people of England.

Mr. BERGE. That's what the London Economist indicates.

Mr. SCHIMMEL. I presume the German-controlled public press was favorable to it.

Mr. BERGE. I am sure they were. To continue to read:

9. The two organizations agree that it is their objective to ensure that as a result of an agreement between their industries unhealthy competition shall be removed. Their aim is to secure as complete cooperation as possible throughout the industrial structure of their respective countries.

I interpolate that our experience in the Antitrust Division through the years clearly shows that persons whose minds run in these channels always regard as unhealthy any competition which they can't beat out. Price cutting is unhealthy competition in their view; butting into territory which they regard as exclusively their own is unhealthy in their view; and the violation by their members of any fixed agreements to preserve monopolistic positions is unhealthy in their view. The interference of outsiders is unhealthy competition in their view.

Now, item 10 is this:

10. The two organizations have agreed to use their best endeavors to promote and foster negotiations between individual industries in their respective countries. They are encouraged in this task owing to the fact that a considerable number of agreements between individual German and British industrial groups are already in existence. There is thus available a large body of experience which inspires confidence that an immediate extension of this policy is both practicable and advantageous.

They are glad to state that approximately a further 50 industrial groups have already signified their willingness in principle to negotiate at an early date.

They also report with satisfaction that negotiations have already been started and are now taking place between 10 industrial groups.

The spirit exemplified in the above declaration is not dead. It is awaiting the moment of peace to step in and resume control of those very industries which are most essential to the rehabilitation of a war-torn world, to the fullest use of our labor and resources. If this spirit is permitted to continue it will sow the seeds of World War No. 3.

In every cartel arrangement which has come to the attention of the Antitrust Division technology has been a vital factor. It is the responsibility of government to see that technology remains free from artificial control and monopoly perversion.

The CHAIRMAN. Now, Mr. Berge, I realize in your official capacity you cannot give an opinion on a bill or principle or policy, but speaking as just Wendell Berge, would you care to express any opinion on the principle behind Senate 702, which is the bill under discussion here?

Mr. BERGE. I'll be glad to do that, Senator. I think the conclusion inevitably follows, from what I have stated this morning and from other facts that we expect to introduce at later hearings, that we can't continue to allow private monopolies and cartels to bottle up science, to bottle up research, for their own private profit alone without regard to the national public interest. Certainly there must be some kind of legislation which will put an end to the kind of abuses I have

Digitized by Google

discussed, and which will furnish positive, affirmative assistance to the development of research outside the particular fortified area occupied by these monopolies and cartels. Certainly one method which deserves most serious consideration is that of providing for the creation of a public research agency which can plan and develop and encourage scientific research from the standpoint of the public interest. Certainly such an important field as technological development cannot be left entirely to the whims of monopolies.

I should suppose that vigorous antitrust enforcement can do much to curb the abuses of which I have spoken and that some such measure as S. 702 can provide the constructive direction and encouragement that is needed to develop technology from the national standpoint.

I haven't made a sufficient study of the specific provisions of this present bill to give a final opinion as to whether in its present form it fully meets the situation, but it does seem to me that some such legislation as this is certainly needed, and that at these hearings progress will be made in developing the particular provisions that may be desirable.

In general, it seems to me that S. 702 points in the right direction. I might say that at later hearings I want to further develop certain aspects of these problems as they appear from the vantage point of the Antitrust Division. I hope to develop facts showing how the quasi-public research foundation has permitted itself to be prostituted to serve the purpose of selfish monoply groups. I also expect to present the case history of one cartel alone which contains within itself practically every objectionable cartel feature, a cartel which in itself is a microcosm of all these evils. I hope also to show how monoply control has prevented new and better war materials from being developed and adopted ~~in~~ certain fields.

Now, there is one item, if I could beg your indulgence for just a moment, that I intended to mention as I went along, although it perhaps doesn't directly relate to the technological restraint, but I think it is pertinent because it shows how monopoly control of an industry works against our interests in wartime.

There is a misconception, generally, I believe, in the public mind that transportation rates are fixed by public regulatory authority. Of course, we know that that is not so, that the tariff that is challenged to the extent that it becomes reviewed by public regulatory authority is exceptional, and that for every one that is passed on there are hundreds, probably thousands, that are simplified and become operative, and we know that rates on public transportation are, for the most part, fixed by the industry itself and often by agreement.

Here is a report or an excerpt from a report dated July 12, 1938, from the Western Commissioner to the members of the Committee of Directors for Commissioner Plan. That's a plan—it existed until this April.

This relates to reduced rates on wheat donated for distribution in China, and the excerpt states:

> At the last meeeting of the association, I advised of information reaching me regarding a movement to secure pledges to cover a minimum shipload of wheat to move the latter part of August for distribution to the common people in China, the wheat to be donated by the farmers and grain men of Texas, Oklahoma, and Kansas, and stated that question had been raised as to whether or not it would be possible to get the railroads to move this wheat to ports at less than published tariff rates.

Digitized by Google

So that shows some of the points they were trying to solve in order to maintain the price structure of the pigment used in the painting trade and textile printing.

Mr. SCHIMMEL. Was this discussion and research going on after the national emergency was declared?

Mr. BERGE. June 26, 1940.

Mr. SCHIMMEL. Then this evidence would show that one of the largest organic research companies of the world was concerned with these trivial problems after the national emergency was declared.

Mr. BERGE. That would seem to be correct. These are from memoranda in their files.

I think we must certainly conclude that we cannot afford as a Nation to place our sole reliance upon monopolistic corporations whose interests have only too often been divided, who have sought restricted production rather than full employment of our resources and labor, and who have sought for monopoly control rather than public welfare. We must learn by the bitter lessons of the early years of this war which found us lacking both materials and the know how to make them, resulting from the restrictive practices of monopolies which instinctively seek to produce as little as possible for the greatest profit.

There are those who scoff at all mention of cartels and refer to them as bogies conjured up to justify an attack on all business. Such an attitude is dangerous. Cartels present the greatest challenge to our system of free enterprise. The Antitrust Division is well aware of the difficulties which lie ahead in this connection.

It is fortunate indeed that the present Government of Great Britain may be expected to take a different attitude toward the cartel problem than that which was taken in the days of the appeasers. The peace of Munich has received its full measure of public consideration. Not so well know but of great importance was the peace of Dusseldorf. Unfortunately, this has been the subject of little public comment. It is important to know about the peace of Dusseldorf because it epitomizes the spirit and power of industrial monopoly in the world.

The conference of Dusseldorf took place on March 15 and 16, 1939, immediately after Hitler's invasion of Czeschoslovakia on March 14. The conference consisted of delegates from the Reichsgruppe Industrie of Germany and from the Federation of British Industries. These two groups represent a substantial portion of German and British industry. At the conclusion of the conference the delegates issued the following text of a joint declaration.

The Reichsgruppe Industrie and the Federation of British Industries, having concluded a general discussion on Anglo-German trade relations, issue the following agreed statement:

1. The two organizations welcome the opportunity which these discussions have given of developing still further the friendly relations which have existed between the two bodies for so many years.

* * * * * * *

4. The two bodies are agreed that the objective to be attained is that the export of all countries should be conducted in such a way as to insure a fair return for the producers of those countries. Hence it is agreed that it is essential to replace destructive competition wherever it may be found by constructive cooperation, designed to foster the expansion of world trade, to the mutual benefit of Great Britain, Germany, and all other countries.

Digitized by Google

5. The two organizations are agreed that it is desirable that individual industries in both countries should endeavor to arrive at industrial agreements which will eliminate destructive competition, wherever occuring, but prices must be fixed at such a level as not to diminish the buying power of the consumers.

6. The two organizations realize that agreements upon prices or other factors between Germany and Great Britain are only a step, although a most important step, toward a more ordered system of world trade. They would welcome the participation of other nations in such agreements.

Mr. SCHIMMEL. Mr. Berge, is this an agreement between Great Britain and Germany, or private parties in Great Britain and Germany?

Mr. BERGE. Private parties. I might tell you a little about these two groups. I have here a brief statement:

Reichsgruppe Industrie is the official organization of German industry. Membership is compulsory for all industrial enterprises under the law of 1934. It is one of the seven groups of the German Economic Chamber. The present Reichsgruppe Industrie is the successor to the National Federation of German Industries which existed from 1917 to 1934.

Well, it was, so far as Germany is concerned, a state-sponsored organization.

The CHAIRMAN. It would correspond, shall we say, to N. A. M., if it were compulsory for industry to belong to N. A. M.?

Mr. BERGE. Yes.

The CHAIRMAN. In other words, an association of manufacturers is a voluntary grouping in the United States, but if we passed a law saying every industrial establishment had to belong to that association and elect delegates, we would have something similar to the Reichsgruppe.

Mr. SCHIMMEL. And it would be part of the Department of Commerce.

Mr. BERGE. The British party to this agreement, the Federation of British Industries, is a voluntary organization of large British industrial concerns and trade associations. It is, according to its official pronouncement, the largest association of manufacturers in the world. I shall continue quoting:

8. The two organizations realize that in certain cases the advantages of agreements between the industries of two countries or of a group of countries may be nullified by competition from the industry in some other country that refuses to become a party to the agreement. In such circumstances it may be necessary for the organizations to obtain the help of their governments and the two organizations agree to collaborate in seeking that help.

The CHAIRMAN. What other countries do you suppose these British and German gentlemen were thinking of in that connection?

Mr. BERGE. I certainly don't think that takes much imagination, and moreover it was interpreted expressly in the critical British press to mean us. I can refer here to an extract from the London Economist of that period, in which, after considerable discussion of this agreement, it is stated:

The United States is one country that would be most unlikely to "become a party to the agreement." The clause consequently means that in given circumstances the Federation of British Industries contemplates seeking British Government subsidies to help German trade against American. Is there something in the atmosphere of Dusseldorf that causes sensible men to lose their wits?

Digitized by Google

The CHAIRMAN. In other words, the British press and the British people were not favorable to such an agreement. It was merely a group of industrialists; it was not the attitude of the people of England.

Mr. BERGE. That's what the London Economist indicates.

Mr. SCHIMMEL. I presume the German-controlled public press was favorable to it.

Mr. BERGE. I am sure they were. To continue to read:

9. The two organizations agree that it is their objective to ensure that as a result of an agreement between their industries unhealthy competition shall be removed. Their aim is to secure as complete cooperation as possible throughout the industrial structure of their respective countries.

I interpolate that our experience in the Antitrust Division through the years clearly shows that persons whose minds run in these channels always regard as unhealthy any competition which they can't beat out. Price cutting is unhealthy competition in their view; butting into territory which they regard as exclusively their own is unhealthy in their view; and the violation by their members of any fixed agreements to preserve monopolistic positions is unhealthy in their view. The interference of outsiders is unhealthy competition in their view.

Now, item 10 is this:

10. The two organizations have agreed to use their best endeavors to promote and foster negotiations between individual industries in their respective countries. They are encouraged in this task owing to the fact that a considerable number of agreements between individual German and British industrial groups are already in existence. There is thus available a large body of experience which inspires confidence that an immediate extension of this policy is both practicable and advantageous.

They are glad to state that approximately a further 50 industrial groups have already signified their willingness in principle to negotiate at an early date.

They also report with satisfaction that negotiations have already been started and are now taking place between 10 industrial groups.

The spirit exemplified in the above declaration is not dead. It is awaiting the moment of peace to step in and resume control of those very industries which are most essential to the rehabilitation of a war-torn world, to the fullest use of our labor and resources. If this spirit is permitted to continue it will sow the seeds of World War No. 3.

In every cartel arrangement which has come to the attention of the Antitrust Division technology has been a vital factor. It is the responsibility of government to see that technology remains free from artificial control and monopoly perversion.

The CHAIRMAN. Now, Mr. Berge, I realize in your official capacity you cannot give an opinion on a bill or principle or policy, but speaking as just Wendell Berge, would you care to express any opinion on the principle behind Senate 702, which is the bill under discussion here?

Mr. BERGE. I'll be glad to do that, Senator. I think the conclusion inevitably follows, from what I have stated this morning and from other facts that we expect to introduce at later hearings, that we can't continue to allow private monopolies and cartels to bottle up science, to bottle up research, for their own private profit alone without regard to the national public interest. Certainly there must be some kind of legislation which will put an end to the kind of abuses I have

Digitized by Google

discussed, and which will furnish positive, affirmative assistance to the development of research outside the particular fortified area occupied by these monopolies and cartels. Certainly one method which deserves most serious consideration is that of providing for the creation of a public research agency which can plan and develop and encourage scientific research from the standpoint of the public interest. Certainly such an important field as technological development cannot be left entirely to the whims of monopolies.

I should suppose that vigorous antitrust enforcement can do much to curb the abuses of which I have spoken and that some such measure as S. 702 can provide the constructive direction and encouragement that is needed to develop technology from the national standpoint.

I haven't made a sufficient study of the specific provisions of this present bill to give a final opinion as to whether in its present form it fully meets the situation, but it does seem to me that some such legislation as this is certainly needed, and that at these hearings progress will be made in developing the particular provisions that may be desirable.

In general, it seems to me that S. 702 points in the right direction. I might say that at later hearings I want to further develop certain aspects of these problems as they appear from the vantage point of the Antitrust Division. I hope to develop facts showing how the quasi-public research foundation has permitted itself to be prostituted to serve the purpose of selfish monoply groups. I also expect to present the case history of one cartel alone which contains within itself practically every objectionable cartel feature, a cartel which in itself is a microcosm of all these evils. I hope also to show how monoply control has prevented new and better war materials from being developed and adopted ~~in~~ certain fields.

Now, there is one item, if I could beg your indulgence for just a moment, that I intended to mention as I went along, although it perhaps doesn't directly relate to the technological restraint, but I think it is pertinent because it shows how monopoly control of an industry works against our interests in wartime.

There is a misconception, generally, I believe, in the public mind that transportation rates are fixed by public regulatory authority. Of course, we know that that is not so, that the tariff that is challenged to the extent that it becomes reviewed by public regulatory authority is exceptional, and that for every one that is passed on there are hundreds, probably thousands, that are simplified and become operative, and we know that rates on public transportation are, for the most part, fixed by the industry itself and often by agreement.

Here is a report or an excerpt from a report dated July 12, 1938, from the Western Commissioner to the members of the Committee of Directors for Commissioner Plan. That's a plan—it existed until this April.

This relates to reduced rates on wheat donated for distribution in China, and the excerpt states:

> At the last meeeting of the association, I advised of information reaching me regarding a movement to secure pledges to cover a minimum shipload of wheat to move the latter part of August for distribution to the common people in China, the wheat to be donated by the farmers and grain men of Texas, Oklahoma, and Kansas, and stated that question had been raised as to whether or not it would be possible to get the railroads to move this wheat to ports at less than published tariff rates.

Digitized by Google

It was the sense of the meeting that the railroads are not financially able to grant reductions in freight rates, and resolution was therefore unanimously adopted, reading as follows:

"*Resolved*, That no reductions from normal tariff rates be authorized in Western territory for movement of wheat to ports intended for charitable distribution to the common people in China."

This resolution was adopted by the Western Association of Railroad Executives at its meeting next preceding July 12, 1938, a meeting of railway competitors at which this question of whether or not rate reductions should be made to accommodate this shipment of wheat for charitable purposes should be granted, was discussed.

As to whether the reason given was a sufficient one or not, it is not my province to express an opinion, but the point is that here was a decision on a question vitally affecting public policy, vitally affecting the movement of wheat pursuant to a Government policy for use in China, that was made by a meeting of private competitors by agreement, and there wasn't any public authority present to pass upon it, nor was it later passed upon.

Now, if I may say one further thing on this general problem—have I expressed myself sufficiently, Senator, on the bill itself?

The CHAIRMAN. I wanted to ask you one question on that phase. As you well know, the Alien Property Custodian now has, I believe, some 36,000 seized patents and formulae, and while this is not authentic, I was told yesterday that a sale of a group of these had been contemplated but due to the temper of the present Congress and the Department of Justice the people contemplating purchase decided not to go ahead with the deal for a while yet at least. Now, we have spent enormous sums of money in the leasing of big laboratories, in our own laboratories, in the employment of scientists, and the purchasing of equipment, and have developed a lot—and I say that advisedly—great numbers of almost revolutionary formulae and processes as a result of this war. If these should get into the hands of the small group of these cartel owners or former cartel participants who expect to renew their cartels, as they stated before the Truman committee, as soon as the war is over, and rather expect to hold them in abeyance pending completion of the war, what would be the effect on American industry as a whole with these competitions, and would it not place foreign countries in even better position industrially than we would be?

Mr. BERGE. I think it would certainly give them a vast advantage, and I think it would be very disadvantageous to our own people.

The CHAIRMAN. And these millions spent by the taxpayers in this country would really redound to the benefit of the foreign countries.

Mr. BERGE. It certainly looks as though it would work out that way.

The CHAIRMAN. In other words, those that were price saving, that would cut the cost of living, would not be permitted to go ahead, and, as in the case of the flashlight matter, the price would be stepped up, with the life cut down, under such agreement.

Mr. BERGE. That is right.

The CHAIRMAN. I have one other question, Mr. Berge. What is your intention, the intention of your Department, with reference to American companies who desire to go along with that federation of British industries and the Reichsgruppe arrangement at Dusseldorf, or do you have any announced intentions on that?

Digitized by Google

Mr. BERGE. We certainly have. I intend to prosecute them, whenever these activities are discovered by our staff and the evidence comes to our hands indicating these activities which fix prices, restrict production, allocate territories, restrict technological development, or accomplish any of the other things forbidden by the antitrust laws, and I would intend to have prosecution whether the participants are American companies or foreign companies. Many of these international cartel agreements and practices which are contrary to our public interest are violative of the Sherman Act without question.

The CHAIRMAN. To get it down to the man on the street, a lot of these cartels are just as much a violation of law as was the manufacture and sale of liquor during prohibition, and as the conspiracy to manufacture and sell narcotics, and other violations of law. We have the law of the land that prohibits that sort of thing, and those are in violation of the law of the land. Isn't that right?

Mr. BERGE. Absolutely. It is true that up to a few years ago we didn't have an organization that was in any way adequate to enforce the Sherman Act. In the last few years we have had an organization which at least has been able to accomplish some things, although we haven't been able, I think, to do all the things that should have been done or that ought to be done in the future to stop these abuses.

Many of these practices which have been discussed today have been uncovered only since the Antitrust Division became active 4 or 5 years ago, and as was apparent from the dates on these documents, they related to activities which in many cases had been going on for many years because there hadn't been any adequate antitrust enforcement.

For the future, I believe that vigorous enforcement of the antitrust laws can do much to break up illegal arrangements now in effect between American corporations and foreign companies. I also believe that vigorous antitrust enforcement during the present and early postwar periods should have the effect of serving notice to cartel-minded foreign industries that when they deal with American companies they will have to observe our antitrust laws.

I think that from the standpoint of American business, its balance of interest is far on the side of keeping out of international agreements which contain restrictive features such as were involved in some of the transactions which I have discussed this morning. In any event, I think it is only fair to say that while I am head of the Antitrust Division, every available legal sanction under the antitrust laws will be applied against domestic and foreign companies when we have evidence that they are violating antitrust laws. By so doing, I think we can accomplish a great deal to free technological development from some of the shackles that these cartels have imposed upon it. I am confident we can institute enough suits to stop some of these practices and serve notice on foreign cartels as well as our own that antitrust violations will not be tolerated.

I hope at these future hearings to supply some more facts that may be pertinent to this bill.

The CHAIRMAN. If it will be convenient for you to come back next Thursday morning at 10:30, October 21, we could hear them.

Mr. BERGE. I think it would. We are preparing some material for the next hearing. I think we can be ready Thursday.

The CHAIRMAN. That's fine.

Digitized by Google

Mr. BERGE. One more thing. It may be too bulky to reprint as part of the record of these hearings, but I am going to offer in evidence a copy of the study on cartels made by Dr. Corwin Edwards of our staff. I understand that this study is one of those subpenaed. It is material and I think would be of great interest to the committee.

(The study referred to was received for separate publication as a monograph of the subcommittee.)

The CHAIRMAN. We will recess, then, until next Thursday at 10:30 a. m.

(Whereupon, at 11:50 a. m., the hearing adjourned, to reconvene at 10:30 a. m., Thursday, October 21, 1943.)

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, OCTOBER 21, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee met at 10:10 a. m., pursuant to adjournment on Friday, October 15, 1943, in room 104, Senate Office Building, Senator Harley M. Kilgore, West Virginia (chairman), presiding.

Present: Senator Harley M. Kilgore, West Virginia (chairman); Senator Rufus C. Holman, Oregon.

Also present: Herbert Schimmel, chief investigator, and John M. Jacobsen, consultant.

The CHAIRMAN. The committee will come to order.

Wendell Berge, of the Department of Justice, Assistant Attorney General, will continue with the testimony which he started on last Thursday.

Mr. Berge, I wish you would go right ahead with your testimony on the same line that you left off last Thursday.

TESTIMONY OF HON. WENDELL BERGE, ASSISTANT ATTORNEY GENERAL OF THE UNITED STATES

Mr. BERGE. Yes, Mr. Chairman.

I am going to review today certain facts disclosed by investigation conducted by the Antitrust Division. The over-all investigation related to the whole drug and pharmaceutical industry and as a result of this over-all investigation a number of indictments were returned and some cases were instituted under the antitrust laws. Court action has not been taken in the particular situation which I am about to disclose, primarily because the patents which were employed in this situation to effect the restraint were subject to a private suit. It was thought that the antitrust proceedings should not be instituted during the pendency of this private litigation, not because this private litigation would be necessarily controlling in the antitrust question, but because the decision as to whether antitrust proceedings would be necessary could more intelligently be made in the light of the outcome of that litigation involving the validity of the patents. But it is quite appropriate for this committee to have the facts now because of their unusual significance in connection with the proposed legislation considered by the committee.

I doubt if there is any situation which the Department of Justice could present which would bear more directly upon the subject covered

Digitized by Google

by S. 702 than the facts which I am going to disclose this morning. In disclosing these facts I have in mind primarily to enlighten the committee as to the abuses which may be committed in the name of privately subsidized nonprofit research foundations.

Some of the activities and practices which will be described may not be presently in effect and may not be carried on today, but their pertinence to the inquiry of this committee is none the less pointed if some of them may have recently been discontinued.

In the annals of monopoly few trusts are as malignant as those which affect the health of our Nation. Today I am going to present material involving the monopolistic control of one of the most essential products of our modern era—the sunshine vitamin, also known as vitamin D. The effect of this monopolistic control has been magnified by the fact that it is the poorer elements of our community which have the greatest need for this product, since it is a preventative and a cure for certain diseases most commonly found among the lower economic strata of our population. Vitamin D is essential for proper bone growth and development, the prevention and cure of rickets, and the prevention or reduction of tooth decay.

The CHAIRMAN. Let me interrupt just at that point, Mr. Berge. Are we not facing, as our troops advance into Europe and reoccupy the conquered countries that have been undergoing a period of partial starvation, to say the least, a situation in which it is going to be necessary to use a quantity of vitamin D if we would build those people up and prevent them from becoming permanent cripples, and will that not have to be furnished by the United States Government in large part?

Mr. BERGE. I am sure it will have to come from this country.

The CHAIRMAN. And, of course, will be a part of our war effort in getting those countries stabilized so they are not dependent on us for support in the future.

Mr. BERGE. I am sure that the export of this vitamin should be a very cardinal part of our program for rehabilitating Europe when the war is over.

The CHAIRMAN. Doesn't this involve, for instance, a thing called viosterol, with which all of us are somewhat familiar?

Mr. BERGE. Yes; it does; and as my discussion proceeds I am going into those things. Practically every family at some time or other has used viosterol, and as this story progresses I am going to bring out how these abuses directly involved viosterol.

The Wisconsin Alumni Research Foundation acts as a screen behind which a group of monopolistic chemical, pharmaceutical, and food companies control vitamin D. The story of the Wisconsin Alumni Research Foundation is of extreme importance to this committee because it indicates how a quasi-public research organization can be flagrantly misused.

At the outset, I should like to state that the Wisconsin Alumni Research Foundation has no formal connection with the University of Wisconsin, and that the University of Wisconsin has absolutely no control over the policies and practices of the alumni foundation. It should be clearly understood, therefore, that nothing contained in this report reflects in any manner upon the University of Wisconsin.

Digitized by Google

The report of the trustees of the foundation, dated June 22, 1931, defines the objectives and purposes of the foundation as follows:

Indeed, one of the soundest reasons for the development of the foundation as a suitable means of handling the Steenbock process lies in the rigid control through which it is possible to protect the public and prevent unscrupulous commercialism from capitalizing the Steenbock discovery.

The investigation by the Antitrust Division indicates, however, that somewhere along the line these laudable objectives were lost. Instead, a summary of our investigation discloses the following:

(1) The foundation has been the vehicle for creating a domestic monopoly resulting in division of fields, price fixing, control of container size, and limitation of potency of vitamin products. As a result, the public has been charged excessive and arbitrarily high prices. The foundation has been described by a licensee as being "merciless in beating out competition" in the field of vitamins.

(2) The foundation has considered plans to denature and adulterate vitamin D preparations in order to maintain high prices.

(3) The foundation has exhibited a lack of interest in research unless a commercial advantage could be obtained.

(4) The foundation has used threats of patent litigations under patents which it knew were very weak to eliminate competition. Some of these patents upon which the monopolistic scheme rested were, in fact, declared invalid in 1943 by the Circuit Court of Appeals for the Ninth Circuit.

The CHAIRMAN. A question just at that point. Isn't it a fact that in a great number of cases a patent is just really the basis for a lawsuit with which to drive a weak competitor out of the business? I am not speaking of the legal purpose, but of the use purpose as practiced by large groups or organizations.

Mr. BERGE. Patents have certainly been used that way, and I think studies that were made before the T. N. E. C. pretty clearly brought out that a multiplicity of infringement suits by well-established and large, financially well-off concerns have been an instrument of forcing economic monopoly in situations where, perhaps, there was no monopoly and in situations where, if the situation could have been thoroughly aired in court by contestants equally matched, the patents wouldn't have been upheld, but a lot of these infringement suits, of course, never go to court; the threat of the litigation or the institution of it is enough to drive competitors out of the field.

The CHAIRMAN. Pardon the interruption. Just go ahead.

Mr. BERGE (continuing). (5) The foundation has suppressed the use of competing processes.

(6) The foundation has organized international cartels with I. G. Farben, of Germany, and Joseph Nathan & Co., of Great Britain, in order to eliminate world competition by dividing world territory into noncompetitive areas.

(7) The foundation has attempted to suppress the publication of scientific research data which were at variance with its monopoly interest.

(8) The foundation, in order to maintain its price-fixing arrangements, has acted as a police organization for its licensees by setting up a black list of price-cutting distributors.

84949—44—pt. 6——3

Digitized by Google

(9) The foundation's licensing scheme has discouraged research by its licensees.

(10) The foundation has endeavored to suppress or prevent truthful advertising in order to eliminate competition.

(11) The foundation has required its licensees to charge unreasonable prices to the Government. A reasonable profit was deemed insufficient.

(12) The foundation has forced farmers to buy vitamin-enriched animal feeds in a monopoly market.

Since 1925 the production and use of vitamin D has been under the control of the Wisconsin Alumni Research Foundation. The control has been based upon the so-called Steenbock patents, and especially upon patent No. 1,680,818 which the foundation regards as the basic patent on vitamin D.

About 1925 Dr. Steenbock, then a professor at the University of Wisconsin, conducted experiments which eventually resulted in the Steenbock patents. Recognizing the commercial possibilities of his developments, Steenbock offered his patents to the university, but the regents of the University did not feel themselves in a position to commercialize them.

The president of the Wisconsin Alumni Association at that time was George I. Haight, a very able patent lawyer of Chicago, who immediately recognized the commercial possibilities of the Steenbock development. Mr. Haight, together with some of the other leading alumni of the university, founded the Wisconsin Alumni Research Foundation to undertake the exploitation of the Steenbock patents and such other patents as the foundation might from time to time acquire.

The CHAIRMAN. At that point, in connection with the research, not the exploitation, but the research leading to the discoveries that were patented, do you have any information as to how this research was financed? Was it financed wholly or in part from public or Federal funds, or did the foundation have any financial part in the conducting of the research work on which the patents were based?

Mr. BERGE. I understand that Steenbock's salary at the time he did this research was from the Wisconsin Agricultural Experiment Station, and partly also from Federal funds, so I think it is fair to say that the money on which the work was done leading to the development of this process was furnished jointly by State and Federal funds.

The CHAIRMAN. In other words, the foundation which now controls, handles and monopolizes the patents had nothing to do with the development of the invention or the formula from which the product comes, but are merely reaping a harvest from an investment of State and Federal funds by a public employee?

Mr. BERGE. That's true. The foundation was formed subsequent to the development of the process, after the work had been done, I guess after the patents had been obtained. In any event, whether the patent was obtained immediately after or just before, the foundation was formed to develop and exploit the process which Dr. Steenbock had developed as a research worker on State and Federal funds.

The CHAIRMAN. That is particularly interesting because that is in

Digitized by Google

line directly with the purpose of this bill that we have under consideration——

Mr. BERGE. That is what I thought.

The CHAIRMAN. Go right ahead, Mr. Berge.

Mr. BERGE. The Wisconsin Alumni Research Foundation was chartered on November 14, 1925, as a nonprofit corporation, and its purposes were stated in the charter to be:

> To promote, encourage, and aid scientific investigation and research at the University of Wisconsin by the faculty, staff, alumni, and students thereof, and those associated therewith, and to provide or assist in providing the means and machinery by which their scientific discoveries, invention, and processes may be developed, applied, and patented, and the public and commercial uses thereof determined, and by which such utilization or disposition may be made of such discoveries, inventions, and processes, and patent rights or interests therein, as may tend to stimulate and promote and provide funds for further scientific investigation and research within said university or colleges or departments thereof; * * *.

The foundation is managed by a board of trustees. Originally these trustees personally handled the work of the foundation, but in 1930 they secured the services of Henry L. Russell, former dean of the University of Wisconsin College of Agriculture. Russell was made director and executive head of the foundation. Later, as business increased, L. D. Barney was employed as business manager, and Ward Ross, an associate of Haight, was retained as general counsel. Steenbock himself appears to have handled most of the technical matters of the foundation insofar as they relate to vitamin D.

The royalties received by the foundation are invested, and the resulting income is utilized for research.

The foundation has controlled vitamin D by reason of its ownership of the Steenbock Patents Nos. 1,680,818, 1,871,135, 1,871,136, and 2,057,399. The underlying concept of all of these patents is that certain substances called provitamins may be activated so as to result in a product having a high vitamin D potency. This activation is accomplished by exposing the provitamin to ultraviolet light, and the basic patent is limited to activation by ultraviolet light produced by an artificial source such as a quartz mercury vapor lamp.

The commercialization of the Steenbock patents was phenomenally successful almost from the very outset. The report of the trustees of the foundation, dated June 22, 1931, states on page 2:

> The accumulation from royalties so far have been almost wholly from the ultraviolet patents. During the calendar year 1930, the gross income was $354,590, or very nearly $1,000 a day throughout the year. This income has been developed within less than 3 years.

The foundation's annual royalties showed a steady increase until 1936, when they amounted to nearly $1,100,000. After 1935, the annual royalties decreased slightly, and in 1939 they amounted to $936,610.70, or over $2,500 per day. Up to 1940, the foundation had received more than $8,500,000 in royalties.

The royalty rates charged by the foundation vary from 10 percent to 3 percent, and less, with the higher royalties applying to only a few products. The enormous size of the market is indicated by the munificent revenues yielded by royalties at these rates.

Digitized by Google

LICENSING PROGRAM

The first requirement for the success of the foundation's licensing program was the elimination of competition from nonlicensees. The foundation's practices in this respect are described in a memorandum dated February 20, 1935, from Connolly, a du Pont patent attorney, to Kupperian of du Pont. The memorandum states:

> The foundation has been merciless in beating out competition throughout the United States wherever such competition threatened to encroach upon the synthetic vitamin D field.

Some of the leading manufacturers in the country are licensees of the foundation. Many of these manufacturers have been licensees for years, while in some cases licenses were obtained by the acquisition of companies holding licenses. Both du Pont and Standard Brands obtained their licenses by the latter method.

Acetol Products, Inc., had a license from the foundation dated November 15, 1929. Du Pont acquired the assets of Acetol and on April 30, 1935, Acetol assigned its license to du Pont. On November 15, 1935, a new agreement was executed between the foundation and du Pont which superseded the Acetol agreement of November 15, 1929.

Standard Brands succeeded to the rights of the Fleischmann Co. under an agreement dated August 8, 1928.

The question naturally arises why these powerful manufacturers would pay the foundation such large royalties on the basis of the weak and limited Steenbock patents. The correspondence indicates that the licensees were not only willing but anxious to pay the royalties in return for the profit opportunities offered under the foundation's schemes

The desire of the licensees to cooperate in the foundation's promotional schemes is well expressed in a latter dated July 8, 1935, from Atkins of du Pont to Barney of the foundation. This letter states:

> The writer feels certain that you understand our desire and willingness to be considered as a part of the foundation. You know our desire to prevent the vitamin D field from falling into disrepute because of too many producers of various types of so-called vitamin D. We would much prefer centralized control in the hands of the foundation and you may count on us to support you even though, at times, we may have differences of opinion.

A memorandum dated January 25, 1937, from H. W. Elley, associate chemical director of du Pont, to a number of the executives of du Pont, explains the reason for centralizing control in the hands of the foundation. This memorandum states:

> He (Mr. Protto, assistant general manager of du Pont) felt that it would be preferable to deal with the Wisconsin Alumni Foundation since they could be of considerable value to the industry in policing and regulating matters. If for any reason such arrangements became unsatisfactory, it would then be possible to consider alternative procedures not involving the use of the foundation patents, that is, we might commercialize the Milas process.

The CHAIRMAN. This memorandum would seem to indicate that some business concerns are willing to go to great lengths to eliminate competition and to create and maintain monopolies.

Digitized by Google

Mr. BERGE. That is right. I think it is interesting also in regard to this extract I just read, that it is quite obvious from it that du Pont was merely thinking of the foundation in terms of its use to the industry in policing and regulating matters, and they indicate in here that if it should later become unnecessary to use the foundation for that purpose, that then they would be willing to disregard the Steenbock patents.

The CHAIRMAN. Go into the competitive field themselves.

Mr. BERGE. Yes. Then they would work under this other process, which is a rival process. I am also reminded that du Pont owned the Milas process, so they indicate their preference for using the Steenbock process with this commercial protection which they think they could get from the foundation and pay the foundation the royalties in preference to development of the use of a process which they owned.

The CHAIRMAN. And which may have been as good.

Mr. BERGE. Yes. The Wisconsin Alumni Research Foundation's licensing program is organized along the lines of an international cartel. The foundation is party to an agreement with the omnipresent I. G. Farbenindustrie of Germany and to another agreement with Joseph Nathan & Co. of Great Britain.

The CHAIRMAN. I. G. Farben—that name comes in every place, apparently. As you said, it's omnipresent. Can you tell me how many patent arrangements or agreements I. G. Farben is mixed up in according to your studies?

Mr. BERGE. We know of at least 162 agreements between Farben and other companies affecting American industry. I wouldn't be sure that those agreements are all with American companies, but they are either with American companies or with companies of other countries, affecting and containing provisions that affect business in this country.

The CHAIRMAN. I. G. Farben is a Government-controlled monopoly of Germany—is that not right?—and has become such under Hitler particularly?

Mr. BERGE. Certainly.

The CHAIRMAN. In other words, it is not a free industry of Germany, but a Government-controlled monopoly in Germany.

Mr. BERGE. That is right. The agreements, following the standard cartel pattern, create exclusive noncompetitive territories. Nathan and I. G. are prohibited from exporting to the United States, and the domestic licensees of the foundation are prohibited from exporting to Germany or Great Britain.

The CHAIRMAN. Are these agreements with Farben and Nathan still in effect?

Mr. BERGE. So far as we know, they are.

The CHAIRMAN. There has been no revocation of those agreements?

Mr. BERGE. Not that we know of.

The CHAIRMAN. In fact, we find a similar situation there that we find in Standard of Jersey, in which there is a cartel agreement, which, while not openly, in the courts, operative, is still held in abeyance and carried out as far as the conditions of war will permit without prosecution.

Digitized by Google

Mr. BERGE. I certainly think that is a fair statement of the factual situation as we understand it.

The domestic licensing policy of the foundation is characterized by a most complex and minute division of fields into noncompetitive areas. Generally speaking, these fields of activity are made exclusive so that all competition between the different licensees or groups of licensees is eliminated. Provisions of the various agreements, which will be later described, prevent any substantial overlapping of these fields. Often the provisions merely prohibit the licensee from accurately describing his product, but the essential object, elimination of competition, is attained.

The CHAIRMAN. Can you specify in more detail just how restrictions on accurate descriptions of products help to eliminate competition?

Mr. BERGE. I am going to specify that a little later on in my statement, Senator. I could go into it now.

The CHAIRMAN. Let's wait until you get down to it in your orderly way.

Mr. BERGE. Thank you.

Fields are divided along three distinct lines: (*a*) The product to be activated, (*b*) the method of activation, and (*c*) the use of the activated product. In the first category there are 13 principal divisions: (1) The pharmaceutical licensees are permitted to activate ergosterol, (2) Standard Brands is licensed to activate yeast and yeast products, (3) du Pont is allowed to activate ergosterol, cholesterol, and other sterols except yeast and yeast products, (4) S. S. Kovaks is allowed to activate sterols derived from yeasts but not yeast, (5) a group of licensees are permitted to activate evaporated milk, (6) a number of licensees are permitted to activate fluid milk, (7) Quaker Oats is allowed to activate cereals, (8) Borden is allowed to activate a milk product known as Dryco, (9) The Wander Co. is allowed to activate Ovaltine, (10) the Commander Larrabee Co. is allowed to activate flour.

The CHAIRMAN. Let me interrupt there with a question. Does this mean that the Quaker Oats Co., Commander Larrabee, and others are given exclusive rights in a particular limited field, and in that field only, so there can be no competition, and they cannot go out of that particular field?

Mr. BERGE. That is what it means.

The CHAIRMAN. In other words, you don't get the right to use the patent under this. You get to use the patent to do a certain minute process in what you are making, and that only, and you can't use research to go beyond that and possibly help out in something else.

Mr. BERGE. That's right; and if you did, you would be violating your license.

The CHAIRMAN. All right.

Mr. BERGE. (11) R. B. Davis & Co. is allowed to activate Cocomalt, (12) Loose-Wiles Biscuit Co. is allowed to activate crackers, and (13) Ayerst, McKenna & Harrison are allowed to activate a food product known as Glucose–D.

The extent to which the division of fields is carried is exemplified in an agreement dated June 27, 1939, between the foundation and the Loose-Wiles Biscuit Co. This agreement authorizes Loose-Wiles to activate graham crackers and wafers slightly sweetened, such as Eng-

Digitized by Google

lish style arrowroot wafers, but does not permit the activation of cakes and cookies.

The CHAIRMAN. Then consumers are forced to buy, say, cereals from Quaker Oats or flour from Commander Larrabee or crackers from Loose-Wiles, if they want a vitamin D enriched food, and that gives an unfair advantage and also enables the price-control scheme to work. In your opinion, does this arrangement substantially limit the output or distribution of vitamin D to the public? In other words, is it a limiting factor?

Mr. BERGE. It certainly must have that effect, Senator Kilgore, because the generally recognized beneficial properties of vitamin D are such that if the licenses weren't restricted in that manner, presumably every manufacturer who manufactures a product in the field would no doubt use the vitamin and no doubt for competitive reasons The free competitive operation in crackers, for example, would mean that if Loose-Wiles can activate crackers with vitamin D, competing crackers for advertising reasons, if for no other, would want to be free to do it and would do it, but the effect of the restricted licensing on crackers, say, would be to hold it down.

The CHAIRMAN. And would pay a royalty for doing it if they could get a chance?

Mr. BERGE. Oh, yes; certainly. In fact, the extent to which the division of fields is carried is exemplified by this agreement between Loose-Wiles and the foundation.

Mr. SCHIMMEL. Mr. Berge, do you know whether it is beneficial to activate these biscuits with vitamin D? It seems to me one or two alternatives exist. If it is beneficial then all crackers should be permitted to be activated; and if it isn't, vitamin D is being used as an advertising stunt.

Mr. BERGE. Yes. I should qualify my answer to the previous question that I am no authority on what products it is beneficial in and when it is not beneficial to activate with vitamin D. My answers to the last questions were based on the assumption that it is beneficial to activate crackers with vitamin D. If it is not beneficial, then the exclusive advertising privilege should not be given to one company, and if it is beneficial I should say they should all have the right to do it.

The CHAIRMAN. Especially when this is a publicly developed patent.

Mr. BERGE. Yes. We will see, as we go along, some products cannot be successfully activated and efforts to do it from a scientific standpoint have failed, yet nevertheless they have endeavored to continue doing it in order to have the royalties that come from an exclusive licensing arrangement to a single company to activate a single product. I suppose, again, if there were free competition in the field it would be impossible for one company to fraudulently represent that its use of the vitamin in its product improved the product, because others would come along and demonstrate the fallacy of it.

According to the method of activation, fields are divided into direct irradiation and activation by the introduction of an irradiated substance. Some few licensees are permitted to use either method of activation, but most are restricted to a single method. One of the most curious licenses issued by the foundation permits the activation of milk by feeding cows irradiated material.

Digitized by Google

The CHAIRMAN. Can you elaborate further on this license for feeding cows irradiated material?

Mr. BERGE. Yes, I can; but later I am going to discuss the milk licenses. We have licenses for evaporated milk, licenses for fluid milk which are confined to the feeding of irradiated material, and others which permit direct irradiation of the milk, and others which permit the introduction of irradiated substances in the milk, but I have a subject on milk and I believe I will defer that until we get to it.

The next method which we will discuss is the division of fields according to use, and this is most detailed but it can be broken up into several general classes. Licenses are issued for the human medicine field, for the human food field, for the fluid milk field, for the evaporated milk field, for the animal feed field, and for a field in which the product is not intended for internal use.

At the outset, it was pointed out that the stated objectives of the foundation are "to protect the public" and "to prevent unscrupulous commercialization." Over the years the foundation's devotion to these objectives appears to have wavered. The foundation appears to be primarily interested in royalties, with little or no regard for the public interest. Article VII of the agreement of November 1, 1938, with the milk companies states that if—

it should be found that the activation of unsweetened evaporated milk by ultraviolet rays under this license is substantially harmful to the user of such milk, or to the milk itself, the licensee shall have the right to cancel this license.

Dr. Russell, in a memorandum dated February 8, 1939, describes a similar position of the foundation in regard to high dosages of vitamin D. This memorandum states:

Steenbock is of the opinion that in view of the fact that vitamin D is no longer a distinctive Steenbock product but can be secured from a variety of sources that the foundation might as well favor the commercialization of high dosages unless there is *very* serious objection on the part of A. M. A. officials toward a move of this sort.

It is to be noted that in neither of these cases is the foundation concerned with public benefit or medical approval, but only with substantial harm and a very serious medical objection.

Another instance of the foundation's regard for the public interest was the Snider Packing Co. matter. In 1931 the Snider Packing Co. obtained irradiated yeast from Fleischman to add to Snider's tomato juice. The results were aparently not too satisfactory.

After this 1931 failure, Snider was persuaded to continue the license and the foundation undertook to supervise the activation of the tomato juice. Steenbock and Scott recommended Acetol irradiated ergosterol and this recommendation was followed.

Despite the recommendations and supervision and guarantees of the foundation, the vitamin D content of the Snider tomato juice did not come up to expectations. This inadequacy was known to Snider, Acetol, and the foundation, and on February 27, 1933, Russell wrote to Acetol stating:

It would be most unfortunate if any publicity was to occur as a result of the reduced potency of the Snider product for it would not only ruin the Snider business in this product, but would reflect most disastrously upon you as well as ourselves. If the Government were to discover this situation and publish the result, it would do irreparable injury to the whole vitamin D situation in foods.

Digitized by Google

The correspondence does not show whether any of the Snider products reached the market under false labels, but the foundation's concern in the matter is clear. The foundation feared only publicity or discovery by the Government.

The CHAIRMAN. At that point I want to ask this. From your study of all those agreements and those limitations placed in the agreements, isn't it rather apparent that the agreements limited research and activity by the licensees? They did not encourage better use by the licensees and a furthering of their activities in different fields, the limitation being for the purpose of controlling the market and the limitation removed would possibly have worked beneficially to the companies that were licensees in producing a better product that was not to be contemplated in the license, had they been able to go ahead with the proper research?

Mr. BERGE. I think the agreements are shot through with limitations of that kind. I think we will see it in this story.

The CHAIRMAN. I am going to ask Senator Holman to take charge for a few minutes.

(Senator Holman took the chair.)

Mr. BERGE. In 1934 and 1935 some research workers, and especially Dr. Reed, of the University of Illinois, found that large doses of vitamin D were highly beneficial in severe cases of asthma, hayfever, and arthritis. These large doses required a highly concentrated product which was most easily used in the form of gelatin capsules. The foundation and its licensees were greatly interested in this project, but feared the effect this concentrate might have on the pricing structure of viosterol. These fears and a suggested solution are referred to in a report of a conference between Russell and Ross, of the foundation, and Nielsen, of Abbott, held early in February 1935. This report, signed by Nielsen, states:

> Mr. Nielsen stated that if the capsules were priced considerably lower than the commercial product unit for unit, nothing would prevent the hospitals from opening the capsules and diluting the content with vegetable oil to obtain a "250D" solution far below the regular cost.
>
> Dean Russell asked for suggestions to prevent this. Mr. Nielsen stated that Abbott Laboratories would give further thought to this problem. Tentatively he suggested that the concentrate might be denatured by the addition of a drug also indicated in these cases—ephedrine, for example—that the product be considered as a drug, not a vitamin, and that it be distributed for clinical trial under a special name—all provided that the licensees agree. *Any untoward effects from it thus would not reflect on the viosterol products on the market.* [Italics supplied.]

I think it is clear what they were driving at, that the fear was that this high potency vitamin D if put out at a price within the reach of the limited market which would desire it; that is, the market for asthma, hayfever, and arthritis cases, might be taken and diluted and used in the other pharmaceutical channels where such potency was not required, and it would thus be possible to take the high potency vitamin and water it down, as it were, and thereby obtain viosterol for ordinary pharmaceutical uses at prices much lower than the prices that were being commercially maintained by the foundation on regular viosterol products.

Mr. SCHIMMEL. Can you explain, Mr. Berge, how they propose to prevent that?

Digitized by Google

Mr. BERGE. All we have is the suggestion here that it might be done by introducing into the high potency capsules another drug which they thought was consistent, at least they were willing to experiment and see whether it was consistent, with its use for asthma, hayfever, arthritis, which would disqualify it for general use. They discussed ephedrine, the idea being that by introducing this into the capsule, though it is quite unnecessary to have it there for the asthma, hayfever, and arthritis cases, it would create a situation whereby it couldn't be used for anything else and whereby the hospitals couldn't extract the oil or the substance.

Mr. SCHIMMEL. Why couldn't it be used for anything else? Would the ephedrine be harmful?

Mr. BERGE. I suppose it might. Ephedrine is a drug that certainly has its place in many types of ailments, particularly connected with the respiratory system, but also I believe is deleterious in other cases. I think there are some patients advised against the use of ephedrine. Certainly the average person taking viosterol for vitamin D doesn't want ephedrine, and I suppose you wouldn't want to give ephedrine to babies, except in special cases where it is called for.

Despite its lofty objectives, the licensing program of the Wisconsin foundation appears to have resulted actually in a substantial reduction of research and development. The foundation's own attitude toward research is indicated in a letter from Russell to the licensees dated August 24, 1936, which states:

> * * * We are hardly interested in the prosecution of problems of a purely scientific character that come to us from outside institutions. Nevertheless, if this is a problem that has definite commercial possibilities, we should not make a hasty adverse decision.

In a letter dated January 6, 1937, addressed to Elley, of du Pont, Waddell, of du Pont, refers to a meeting in Madison with members of the foundation and states:

> * * * He (Steenbock) mentioned that most of the pharmaceutical licensees had not been interested in obtaining rights to the manufacture of crystallin vitamin D (from ergosterol) and that the present situation might find them with the same attitude. He admitted, however, that if the patent situation and licensing arrangements worked out so that the five pharmaceutical companies were again in a position of having an exclusive hold of the synthetic vitamin D field that undoubtedly they would be very much interested.

Thus, in spite of the acknowledged physiological superiority of vitamin D_3, the foundation was reluctant to do any research whatever unless the willingness and cooperation of the licensees showed a definite promise of substantial profits.

The effect of the licensing policy on the research activities of licensees is explained in a letter from Killheffer of Acetol to Waddell, research director of Acetol. This letter states:

> According to my reading of the contract with Wisconsin Alumni Foundation, we are not at liberty to use yeast in connection with irradiated ergosterol, this field being reserved exclusively to Fleischmann. In view of this fact, I do not think we ought to waste time or money on experiments in connection with yeast.

In at least one case where the foundation sponsored and financed research, the publication of the results of the research was suppressed by the foundation because they were at variance with the foundation's commercial interests. In an attempt to eliminate the noninfringing product of General Mills from competition with the viosterol of the

Digitized by Google

pharmaceutical licensees, the foundation attempted to prove that viosterol was clinically superior to the General Mills product. To accomplish this, the foundation made a grant to Drs. Smith and Owens, of Freedman's Hospital, in Washington, D. C., to run certain tests comparing the effectiveness of the General Mills product and viosterol, and to prepare an article for the medical journals on the results. On June 17, 1936, Drs. Smith and Owens submitted to the foundation their article, which contains the following conclusion:

A comparative study of nine cases of varying degrees of rickets receiving 800 U. S. P. units of Squibb's Viosterol daily with eleven comparable cases receiving 800 U. S. P. units of American Pharmaceutical Co. Viosterol (General Mills product) shows no significant difference in rate or degree of healing as determined (1) by X-ray of the wrists and
(3) Ca and P determinations on the blood.

The attitude of the foundation and its licensees to this article is described in a letter from Lescohier of Parke, Davis to Anderson of Squibb, dated July 6, 1936. Dr. Lescohier states:

If this article is published the Steenbock group are certainly in the position of being hung with their own rope. I should like to see the publication suppressed but am pretty certain that Mead Johnson will see that it is published, since they are no longer vitally interested in viosterol. Certainly anything that can be done to delay publication would be advisable.

In a letter dated August 17, 1936, Scott, of the foundation, expressed the foundation's attitude on this article as follows:

* * * From the outset, of course, we have been opposed to publication of this paper in any form. We have advised Dr. Smith that it was necessary to get the opinions of the pharmaceutical committee, and we intend to confer with them in the near future, advising them that publication of the work is not desirable.

Mr. SCHIMMEL. Did this article ever appear, or did the foundation succeed in suppressing it?

Mr. BERGE. I think it did not appear. We have checked on that. I have a note here on it, which is the result of the check that was made last evening or this morning, and I will read it:

Drs. Smith and Owens received $3,000 from the foundation to carry on research in the comparative value of two kinds of viosterol in the treatment of rickets, but they neglected to stipulate in their agreement that the findings would be published regardless of the outcome. When the results showed that the rival viosterol was as effective as the foundation's product the foundation refused to permit publication. There has been no publication of the results of the comparative tests of the two kinds of viosterol. Some of the material from the study which did not bear on the comparison between the foundation's product and the other product was published in January 1940 in the Journal of Pediatrics. The foundation, therefore, was successful in preventing publication in a medical journal of the results of the study.

The only publication was of other matter collaterally obtained in the investigation, but the comparison of the two products was never published.

Mr. SCHIMMEL. Mr. Berge, did those five manufacturers represent any sizable proportion of the business?

Mr. BERGE. Certainly not in numbers of companies. We know of 190 pharmaceutical manufacturers. Now, some of those may be pretty small, but this would be a very small percentage of the total number.

Mr. SCHIMMEL. They limited the use of manufacture of vitamin D by pharmaceutical houses to 5 out of approximately 200 drug manufacturers?

Digitized by Google

Mr. BERGE. Of course, I said a moment ago many of these 190 may be small companies, and one can speculate that this is one of the reasons they are small, because they don't get in on the important licenses like this.

The foundation has also suppressed the use of competing patents. Article II of the supplemental agreements of June 3, 1937, between the foundation and Mead, Johnson, Squibb, Parke-Davis, and Abbott provides for the licensing of additional pharmaceutical manufacturers who had been using Sperti patent No. 1,676,579 on the irradiation of pharmaceutical products. This section provides:

> It is understood and agreed that such additional licensees shall be prohibited, by appropriate restrictions in any license agreements that may be entered into between the licensor and such additional licensees, from employing the process described and claimed in United States letters patent No. 1,676,579 to George Sperti and from advertising the use of said process in connection with products sold under said license agreements. * * *

Thus the results of the foundation's licensing program have been to stifle its own research activities and the research activities of its licensees, to prevent the publication of information which might jeopardize the foundation's financial interests, and to suppress competing patents. Certainly these are peculiar results of a program instituted "to protect the public" and "to prevent unscrupulous commercialism."

PHARMACEUTICAL LICENSES

One of the most important fields in the foundation's scheme of exploitation is the pharmaceutical field. All vitamin D products used in the treatment or prevention of human ills are embraced within the pharmaceutical field, and restrictions in this field thus have a direct and immediate effect on the health and well-being of the general public. Also, at the time the foundation embarked on its licensing program, the pharmaceutical field probably was one of the most promising, both from a publicity and a profit standpoint.

In or about March 1929 the foundation made agreements with five licensees, all manufacturers of pharmaceuticals: Mead, Johnson & Co., Winthrop Chemical Co., Abbott Laboratories, Parke-Davis & Co., and E. R. Squibb & Sons. These agreements have been amended several times by letter agreements and supplemental agreements. Two letters, dated March 20 and April 27, 1939, offer the licensees certain royalty reductions, and it is assumed that these reductions were accepted. These letters do not, however, make any substantial changes in the restrictive provisions of the agreement.

PRICE FIXING

This combination in restraint of trade between the foundation and its licensees is expressed in various ways throughout the pharmaceutical licenses. For example, article XII of the agreement of March 21, 1929, fixed minimum prices for the sale of irradiated pharmaceutical products. This article contains the following language:

> Such prices so established shall remain in effect indefinitely but may be changed by the licensor not less than ninety (90) days after consultation with all the licensees of this group.

Article XIII of the agreement of March 21, 1939, states that the potencies of the pharmaceutical products shall remain fixed "until

Digitized by Google

and unless changed by the mutual understanding of a majority of the licensees of this group." Article XVII prevents the assignment of the licenses "without the written consent of the licensor, the patentee, and the licensees under similar licenses." Each of the agreements with Abbott, Mead Johnson, Squibb, and Parke, Davis, executed June 3, 1937, also contain long recitals regarding the provisions to be introduced into a new contract with Winthrop Chemical Co., Inc.

Price stabilization was one of the main considerations offered by the foundation to its licensees in exchange for the royalties. It might almost be said that this price stabilization was the bait which made the licensing scheme of the foundation so attractive to the various manufacturers. Clough, of Abbott, wrote to R. Russell, of the foundation, on April 21, 1936, and referred to the importance of price-fixing activities of the foundation in this language:

It was argued by your trustees that under our arrangement with the foundation, we were given certain benefits of price stabilization which was well worth the additional 5 percent.

Mr. SCHIMMEL. How were these prices fixed, Mr. Berge?

Mr. BERGE. The licensees themselves fixed the prices and the foundation acted as the arbiter. The licensees agreed upon the prices and those became the foundation prices.

Mr. SCHIMMEL. So would it be correct for me to draw the conclusion that the so-called public foundation was a front behind which price-fixing monopolistic practices were being practiced?

Mr. BERGE. I think that is the logical conclusion; yes. Any anti-trust lawyer would advise his client that you can't fix prices by agreement. I don't think it was any more legal done this way, but at least it had the halo that goes with a foundation. The foundation accepted the prices that they agreed upon as the prices that would be enforced through the licensing agreements.

That price-fixing was one of the most important points in the pharmaceutical licensing plan and is described in a memorandum of a conference between Anderson and Lewis, of Squibb, and Ross and Barney, of the foundation, on February 3, 1939. The memorandum states:

We outlined the high potency D situation both with respect to Merrell and Winthrop. Their reaction was first that Squibb would have no objection to Merrell's continuing to sell its concentrated viosterol if we could line up Merrell on its regular viosterol from the standpoint of container size and price. We indicated that this latter could be accomplished.

Further, the papers indicate that this price fixing was carried over into the field of resale prices. This is brought out in a letter from R. D. Keim, of Squibb, to Dean Russell, of the foundation, dated July 23, 1934, in which Mr. Keim states:

We gave this matter our very serious consideration and wrote to all of the licensees, under date of July 19, 1934, as per copy enclosed and we firmly believe that our suggested full retail prices per package to the consumer and minimum retail prices per package to the consumer for viosterol in oil and cod liver oil with viosterol are more in line with present market trends and the present economic market conditions than those proposed by Parke Davis & Co.

We are desirious of acting in harmony with all the other licensees of the Wisconsin Alumni Research Foundation in regard to the stabilization of the market for viosterol in oil and cod liver oil with viosterol. However, we firmly believe that it is necessary to establish a schedule of minimum retail prices to the consumer such as we have suggested in order to bring about such stabilization.

Prices were not only fixed; they were fixed arbitrarily at levels which can only be regarded as extortionate in view of the economic status

Digitized by Google

Mr. BERGE. Of course, I said a moment ago many of these 190 may be small companies, and one can speculate that this is one of the reasons they are small, because they don't get in on the important licenses like this.

The foundation has also suppressed the use of competing patents. Article II of the supplemental agreements of June 3, 1937, between the foundation and Mead, Johnson, Squibb, Parke-Davis, and Abbott provides for the licensing of additional pharmaceutical manufacturers who had been using Sperti patent No. 1,676,579 on the irradiation of pharmaceutical products. This section provides:

> It is understood and agreed that such additional licensees shall be prohibited, by appropriate restrictions in any license agreements that may be entered into between the licensor and such additional licensees, from employing the process described and claimed in United States letters patent No. 1,676,579 to George Sperti and from advertising the use of said process in connection with products sold under said license agreements. * * *

Thus the results of the foundation's licensing program have been to stifle its own research activities and the research activities of its licensees, to prevent the publication of information which might jeopardize the foundation's financial interests, and to suppress competing patents. Certainly these are peculiar results of a program instituted "to protect the public" and "to prevent unscrupulous commercialism."

PHARMACEUTICAL LICENSES

One of the most important fields in the foundation's scheme of exploitation is the pharmaceutical field. All vitamin D products used in the treatment or prevention of human ills are embraced within the pharmaceutical field, and restrictions in this field thus have a direct and immediate effect on the health and well-being of the general public. Also, at the time the foundation embarked on its licensing program, the pharmaceutical field probably was one of the most promising, both from a publicity and a profit standpoint.

In or about March 1929 the foundation made agreements with five licensees, all manufacturers of pharmaceuticals: Mead, Johnson & Co., Winthrop Chemical Co., Abbott Laboratories, Parke-Davis & Co., and E. R. Squibb & Sons. These agreements have been amended several times by letter agreements and supplemental agreements. Two letters, dated March 20 and April 27, 1939, offer the licensees certain royalty reductions, and it is assumed that these reductions were accepted. These letters do not, however, make any substantial changes in the restrictive provisions of the agreement.

PRICE FIXING

This combination in restraint of trade between the foundation and its licensees is expressed in various ways throughout the pharmaceutical licenses. For example, article XII of the agreement of March 21, 1929, fixed minimum prices for the sale of irradiated pharmaceutical products. This article contains the following language:

> Such prices so established shall remain in effect indefinitely but may be changed by the licensor not less than ninety (90) days after consultation with all the licensees of this group.

Article XIII of the agreement of March 21, 1939, states that the potencies of the pharmaceutical products shall remain fixed "until

Digitized by Google

and unless changed by the mutual understanding of a majority of the licensees of this group." Article XVII prevents the assignment of the licenses "without the written consent of the licensor, the patentee, and the licensees under similar licenses." Each of the agreements with Abbott, Mead Johnson, Squibb, and Parke, Davis, executed June 3, 1937, also contain long recitals regarding the provisions to be introduced into a new contract with Winthrop Chemical Co., Inc.

Price stabilization was one of the main considerations offered by the foundation to its licensees in exchange for the royalties. It might almost be said that this price stabilization was the bait which made the licensing scheme of the foundation so attractive to the various manufacturers. Clough, of Abbott, wrote to R. Russell, of the foundation, on April 21, 1936, and referred to the importance of price-fixing activities of the foundation in this language:

It was argued by your trustees that under our arrangement with the foundation, we were given certain benefits of price stabilization which was well worth the additional 5 percent.

Mr. SCHIMMEL. How were these prices fixed, Mr. Berge?

Mr. BERGE. The licensees themselves fixed the prices and the foundation acted as the arbiter. The licensees agreed upon the prices and those became the foundation prices.

Mr. SCHIMMEL. So would it be correct for me to draw the conclusion that the so-called public foundation was a front behind which price-fixing monopolistic practices were being practiced?

Mr. BERGE. I think that is the logical conclusion; yes. Any anti-trust lawyer would advise his client that you can't fix prices by agreement. I don't think it was any more legal done this way, but at least it had the halo that goes with a foundation. The foundation accepted the prices that they agreed upon as the prices that would be enforced through the licensing agreements.

That price-fixing was one of the most important points in the pharmaceutical licensing plan and is described in a memorandum of a conference between Anderson and Lewis, of Squibb, and Ross and Barney, of the foundation, on February 3, 1939. The memorandum states:

We outlined the high potency D situation both with respect to Merrell and Winthrop. Their reaction was first that Squibb would have no objection to Merrell's continuing to sell its concentrated viosterol if we could line up Merrell on its regular viosterol from the standpoint of container size and price. We indicated that this latter could be accomplished.

Further, the papers indicate that this price fixing was carried over into the field of resale prices. This is brought out in a letter from R. D. Keim, of Squibb, to Dean Russell, of the foundation, dated July 23, 1934, in which Mr. Keim states:

We gave this matter our very serious consideration and wrote to all of the licensees, under date of July 19, 1934, as per copy enclosed and we firmly believe that our suggested full retail prices per package to the consumer and minimum retail prices per package to the consumer for viosterol in oil and cod liver oil with viosterol are more in line with present market trends and the present economic market conditions than those proposed by Parke Davis & Co.

We are desirious of acting in harmony with all the other licensees of the Wisconsin Alumni Research Foundation in regard to the stabilization of the market for viosterol in oil and cod liver oil with viosterol. However, we firmly believe that it is necessary to establish a schedule of minimum retail prices to the consumer such as we have suggested in order to bring about such stabilization.

Prices were not only fixed; they were fixed arbitrarily at levels which can only be regarded as extortionate in view of the economic status

Digitized by Google

of the people whose need for vitamin D was the greatest. Barney, the business manager of the foundation, stated on examination in a lawsuit:

It is my understanding that rickets is found to a great extent in the so-called poorer class of people.

Despite this full awareness of the incidence of their high-price policy, the foundation and its licensees remorselessly maintained prices on the viosterol products so high that their use was practically restricted to those who had least need for them. This is recognized in a letter dated March 30, 1934, from Russell to the pharmaceutical licensees, which states:

3. Very severe criticism from certain prominent pediatricians has been lodged against the foundation on account of the alleged high retail prices of certain vitamin D preparations.

The ACTING CHAIRMAN. May I interpose a question here? Presumably the consumption of these food and drug items containing vitamin D must be enormous to produce the revenue that has been indicated previously in your statement.

Mr. BERGE. It is.

The ACTING CHAIRMAN. But the consumption, you believe, is, even so, among the well-to-do.

Mr. BERGE. Well, you see, Senator, that total revenue from royalties that I mentioned earlier is the over-all royalty figure which comes from the use in foods. I think before you came in I went over a long list of the type of licenses which they grant.

The ACTING CHAIRMAN. You needn't repeat it. I'll get it from the record.

Mr. BERGE. Now, viosterol is one of the more expensive unit products; that is, it is very highly concentrated, and the use of vitamin D in bread, milk, crackers, and for animal feeds would no doubt be less per unit than in this concentrated form, but I am speaking here, of course, about the product that is used particularly in the additional nourishment needed for small children, and we have here this evidence. I merely cited one extract, but there are complaints by pediatricians that the cost of it inhibited its use by those that most needed it.

The price-fixing activities of the foundation also extend to sales to Federal, State, and local governments and Government agencies.

On May 10, 1940, W. S. Merrell Co. wrote to the foundation:

We have an inquiry from the Government for a substantial quantity of irradiated ergosterol and are wondering if we shall have to abide by the price schedule in our license agreement in quoting. In other words, would our quotation have to be the same as our minimum price to wholesalers, or could we figure on a reasonable profit basis, taking our cost on such a large quantity for one shipment into consideration?

The letter also contains a postscript:

We know that the price would have to be much lower than our price to wholesalers to secure the order.

In spite of the fact that Merrell was merely asking to quote on a "reasonable profit basis," and assured the foundation that the price would have to be "much lower * * * to secure the order," Barney, of the foundation, replied on May 13, 1940, stating:

Under the present license agreement with your company and the other pharmaceutical licenses of the foundation under the Steenbock patents, the minimum

Digitized by Google

price to be quoted to Government institutions is the minimum wholesale price as outlined in your contract, less 2-percent discount for cash if paid by the 10th of the following month.

All of the other pharmaceutical licenses of the foundation have operated under this arrangement for some time. We note, however, your postscript which indicates that the quotation to the Government will have to be lower than the price to wholesalers in order to secure the order. We dislike to see your company or any of our other licensees lose business.

In other words, they were sorry about it, but the same price to wholesalers would have to be maintained on Government orders, even though the company, because of the large volume of the order, could have afforded to quote a lower price and still have made a reasonable profit.

CONTROL OF POTENCY AND CONTAINER SIZE

The pharmaceutical agreements fix both the potency and the quantities in which vitamin D concentrates may be sold by the pharmaceutical licensees. The purpose and effect of these additional controls was described by Barney, of the foundation.

We feel that it is perfectly proper to control the price of viosterol and cod-liver oil from a legal standpoint, and unless we control the potency of the product and size of the container, price control of the product, of course, would be rather useless.

The pharmaceutical agreements specified that potencies could be changed only by "mutual agreement of licensees of this group," while container sizes could be changed by "mutual understanding of a majority of the licensees of this group." Operations were in exact accord with these provisions, and only unanimous approval by the licensees could authorize potency changes. Notes of a telephone conversation of March 30, 1932, between Nielsen, of Mead, Johnson, and Russell, of the foundation state:

Russell said under no condition could such approval be given. That Mead, Johnson had no warrant in changing the potency without the knowledge and approval and consent, not only of the foundation but also of the other four licensees.

(Senator Kilgore resumed the chair.)

The CHAIRMAN. Mr. Berge, right at that point, there has been a lot of talk about strait jackets on research and science. Would you call that anything but a strait jacket, or is it just a pair of handcuffs?

Mr. BERGE. It is probably both. Here are five companies, supposed by the public to be competing companies, which, if competing, would like to get business from each other by making a superior product and selling it at the lowest cost possible.

The CHAIRMAN. And as pharmaceutical companies they had laboratories.

Mr. BERGE. Yes, and presumably they might have been able to improve some on the product and on the manner of putting it out, increasing the potency. I suppose that would mean decreasing the unit cost. But here they are, bound up by an agreement which denies them the right to change the potency without the approval and consent of four of their principal competitors.

The CHAIRMAN. The interesting thing, to me, is that not only they joined the foundation, which might have said it was interested in maintaining the purity of the product, but they also joined the com-

Digitized by Google

petitors so that one competitor can't go ahead with any improvements unless the other three agree with him.

Mr. BERGE. That's right. That's certainly a strait jacket or handcuffs, or any other simile which denotes restriction would, I think, be applicable.

BLACKLISTS AND WHITELISTS OF DEALERS

Prior to December 24, 1936, the foundation and its pharmaceutical licensees maintained a very effective black list and white list of dealers. While the approval of dealers was ostensibly within the exclusive control of the foundation, actually it was again a matter for vote by the licensees. L. D. Barney, business manager of the foundation, described the program to Dr. Russell, director of the foundation, in a memorandum dated November 6, 1935, in the following language:

As you know, the usual procedure in handling requests of wholesale drug concerns with respect to their addition to the approved wholesaler list for the sale of viosterol products is for the foundation to send the name and address of this company to the five licensees. They, in turn, investigate the company and report back to us whether or not they favor the addition of the said company to the list. The general procedure set up several years ago was that a majority of the licensees (three) would constitute sufficient authority on the part of the foundation to add the name of the company to the approved list.

By reason of the manner in which these are handled, it is impossible for us to tell the licensee when we refuse their request anything other than the fact that the committee, which handles the request, did not approve their application, or, stated in another way, the committee voted in the negative.

What he is saying is that "we can't tell an applicant who has been rejected, anything except that the committee hadn't approved the application, the committee voted in the negative."

Obviously we cannot say that our licensees did not favor the addition of this company to the group.

Now, if I understand what that means, they didn't want the wholesalers to know that in fact it was the licensees passing on this. If you just said the committee it might be inferred it is foundation action, but the object obviously would suggest illegality on the face of it if the wholesalers knew they had been blacklisted by the vote of the licensees.

The CHAIRMAN. In other words, the foundation descended there to outright deceit.

Mr. BERGE. I think that's what happened.

W. N. Larson, of Mead, Johnson, recognized that this blacklist and whitelist might be illegal, and referred to it in a letter dated December 22, 1936, to Ward Ross, counsel for the foundation. He sent copies to each of the other pharmaceutical licensees. Larson's letter states:

We would have no objection to the foundation acting as a clearing house for information relative to those to whom wholesale terms on viosterol and cod-liver oil with viosterol are extended, except we wonder if such action might not be construed as a violation of law. Anyone investigating this activity might well inquire as to why this was done, if some action which could be construed as collusion or restraint of trade were not contemplated.

One of the principal functions of the blacklisting and whitelisting of wholesalers and retailers was the maintenance of resale prices. This is explained in a letter dated June 29, 1931, from W. N. Larson,

Digitized by Google

of Mead, Johnson, to N. A. Buttle, of Winthrop, with copies to the other licensees and to the foundation. This letter states:

To our knowledge there have been very few departures from the suggested minimum price, and these departures have been confined to a very few relatively unimportant wholesale druggists whose objectives, unlike ours, are not to stabilize conditions in the drug trade. It is the legal right of any manufacturer to refuse to sell to a wholesaler or any other customer in fact, who will not carry out his wishes. I hope that it will not be necessary, but it is entirely possible that it may become desirable, for the foundation to make the list of preferred jobbers a trifle more exclusive than it is at the present time. We would work with the foundation in any reasonable steps in that direction. Better proof of our desire to have this matter straightened out could hardly be given, we believe.

At least as early as 1933 the foundation and the pharmaceutical licensees realized that this blacklist was illegal. On May 1, 1933, Larson, of Mead, Johnson, wrote to Gunn, attorney for the foundation, regarding this blacklist, and said:

Licensees cannot make agreements among themselves in these matters and must, of course, take the position that they are acting under instructions from the Wisconsin Alumni Research Foundation. The revelation that that is not the case might prove to be very embarrassing, as you probably realize. My suggestion is that, in cases of this kind, you simply inform the inquiring party that your action was guided by a committee, operating under the Wisconsin Alumni Research Foundation, and that this committee does not reveal its reasons for taking any action of this kind.

Probably in part on account of this growing disquietude concerning the lawfulness of their undercover boycott, in part also, perhaps, because of the vast amount of detail work involved in maintaining the list, the foundation ceased rendering this service for its licensees some time late in 1936. On December 24, 1936, Barney, of the foundation, referred a prospective wholesaler to the pharmaceutical licensees for direct action.

The pharmaceutical agreements were thus far more than mere restrictive patent licenses. Prices, potencies, dosages, and container sizes were fixed by the licensees jointly and black lists of price-cutting dealers were established and maintained. The foundation offered little more than a facade of respectability to conceal these activities, and it was for this concealment that the licensees were willing to pay so handsomely.

PROTECTION OF PHARMACEUTICAL LICENSES

The remaining agreements of the foundation prohibit the other licensees from invading the pharmaceutical field. Several of the agreements prohibit in express terms sales of activated products for pharmaceutical uses, others so limit the potency of the licensed product as to make it worthless for medicinal purposes, while still others merely limit the right of the licensee to claim curative properties for his product in his advertising.

All the agreements of the foundation clearly show the intention to protect the exclusive market of the pharmaceutical licensees in the human medicine field. Actually this practice is carried to a ridiculous extent. In a memorandum dated November 14, 1935, written by Ward Ross, general counsel for the foundation, regarding a conference with Dr. Hooper, of Withrop, Ross states:

With regard to the comparison between viosterol and drisdol, I asked Hooper how he would like it if our milk licensees said that 1 quart of irradiated milk

Digitized by Google

was equal to 10 drops of viosterol. Hooper claimed that this would be an invasion of the pharmaceutical field by our milk licensees and that they would be selling milk as medicine.

Apparently the licensees are prevented from telling the truthful merits of their products if the truth would cause an overlapping of the artificial division of fields.

BREAD

Another industry capable of using large quantities of vitamin D was the bread industry. Under an agreement dated November 15, 1935, this field is allocated exclusively to du Pont. Du Pont's chief concern in the bread field was price "stabilization," which to du Pont meant the maintenance of high price levels. Du Pont was even willing to share the field with Standard Brands to accomplish this end. A memorandum, dated September 19, 1935, from Mr. Kenneth T. King, of du Pont, to Mr. Ralph Horton and Mr. W. S. Kies, a trustee of the foundation, states:

We would be willing for the foundation to grant nonexclusive license for the sale of vitamin D from ergosterol in the bread field to the Fleischmann Co., providing the price of the vitamin D in the bread field shall be stabilized.

The CHAIRMAN. This word "stabilize" has been used in many of these letters. By stabilization they mean artificial price levels rather than the thing we talk so much about and do so little about, the law of supply and demand with cost and overhead governing a price; isn't that right?

Mr. BERGE. Yes.

The CHAIRMAN. The public thinks of stabilization as a question of supply and demand, the cost of manufacture, the cost of distribution, and a fair profit, but this price stabilization is not designed for stabilization.

Mr. BERGE. This is to fix an artificial price level on it. That is the kind of price stabilization that they mean in agreements of this kind, and we find it all through these price-fixing cases.

Senator HOLMAN. That's the word—"price fixing."

Mr. BERGE. Yes.

The CHAIRMAN. The Wisconsin Research Foundation is not a manufacturing group, is it?

Mr. BERGE. That's right.

The CHAIRMAN. They are simply an agency to control a certain process developed with public funds, and their entire object in life is to allocate that and distribute it to certain preferred licensees.

Mr. BERGE. The foundation holds these patents.

The CHAIRMAN. The foundation has no investment other than their legal investment, office expense, and publicity; is that right?

Mr. BERGE. I understand that in a limited field they sell concentrates which they don't manufacture, but that's in regard to milk.

The CHAIRMAN. In other words, they are dealers in concentrates which are manufactured by others for them?

Mr. BERGE. That's right. They do no manufacturing and they hold these patents and license them on these terms. They have an administrative organization for supervising this work.

Senator HOLMAN. I want to interpose a question at this point. The foundation is operated for personal profit; it's a private corporation; is that correct?

Digitized by Google

Mr. BERGE. Yes.

Senator HOLMAN. What becomes of the accumulated surplus resulting from their operations? Is it distributed to private persons, or is it a public philanthropic fund?

Mr. BERGE. It's set up as a nonprofit corporation, Senator, and these large royalties, according to the articles establishing the foundation, are turned over to the university for research purposes. That is, the income is made available to the University of Wisconsin, and it is stated to be for purposes of research.

The CHAIRMAN. In other words, the record purpose of the foundation is all right if they would change their technique and their method of handling and make the result of this research available. The purpose of the foundation is all right, but the foundation has been warped into a cash register, really.

Mr. BERGE. I am glad to make it clear that we are not complaining here that the moneys realized from these royalties are spent for any ulterior or improper purpose. I stated that it goes to the University of Wisconsin for research; I also stated that the university does not control the foundation, nor is there any formal connection. In other words, I would say that the position of the university with respect to the receipt of these funds is about the same as the university's position would be with respect to any donor. Most of our public universities, as well as our private institutions, receive gifts from wealthy alumni, or from the wills and bequests of persons who leave the residuary interest of their estates for the establishment of a foundation or fund for research or science or law or other purposes, and I don't take it that the recipients of the bequests thereby undertake to guarantee the legitimacy or the purity of all the activities of the donors. I don't think it is any reflection on my own alma mater that she has accepted certain bequests from industrialists who may have been engaged, in the early days of our history, in cutthroat practices.

Senator HOLMAN. There are certain persons in this foundation who are devoting their time and talents to its operations. Have you explored their participation, if any, in the receipts, in the form of salaries, commissions, bonuses, or what not?

Mr. BERGE. I don't think we have; but I don't think there is any suggestion intended that their own personal receipts are improper.

Senator HOLMAN. I just want the record. I am not drawing a conclusion.

Mr. BERGE. Certainly. I am answering the question as best I can. We have not particularly explored that, but there is nothing that I have to indicate—and I say that not as argument but as a factual statement—that there is any improper receipt of moneys by the trustees or employees of the foundation. They are salaried men, the employees, and the trustees serve free, but the salaried men are doing this job which is provided for in the set-up of the organization.

The CHAIRMAN. The point in this is that a product developed by public funds, with the idea of being of immense value to the Nation, has been whipped around by agreements to such an extent that it is not rendering that service for which the foundation and the talents of the original men were expended.

Mr. BERGE. Yes.

Digitized by Google

The agreement between du Pont and the foundation expressly stipulates the limits of licenseess' descretion in price policy. Article 2 (C) provides:

> Du Pont shall not sell said irradiated or activated ergosterol or its derivatives at a higher price than one dollar and a half ($1.50) or at a lower price than ninety-five cents ($0.95) per million U. S. P. A. (revised 1934) vitamin D units.

Mr. SCHIMMEL. That is, regardless of the cost of manufacture, those are to be the prices?

Mr. BERGE. That's right.

The foundation's support of du Pont's policy of high prices is indicated in a letter dated July 18, 1935, from Barney to Atkins, of du Pont, which states:

> Dr. Waddell stated that it was his opinion that if General Baking came back into the picture a higher price for ergosterol should be charged. We discussed the possibility of a price of $1.25 to $1.50 per million Steenbock units.

So long as the foundation could be "merciless in beating out competition" price fixing at these levels was quite attractive. But by 1940 the weakness of the Steenbock patents was so apparent that the fixed prices became a competitive hazard. On March 5, 1940, King of du Pont wrote to Barney of the foundation stating:

> In reply to your letter of February 24 we are very much interested in modifying our contract with respect to the maximum and minimum provisions in the baking field. In fact, we believe the simplest way to handle this question is to delete from our present contract the clause specifying maximum and minimum provisions. This, of course, was explained to you over the telephone in our recent conversation concerning General Baking. I believe unless some change is made in the maximum and minimum provisions all business in this field will be lost by the licensees of the foundation.

I take it that what that means is that the growing consciousness of the weakness of this patent under which they were working had them all uneasy that they wouldn't be able much longer to control the situation. Companies would step into this field and break the price structure and go ahead and make these products, because the effect of the licenses was losing its potency.

The foundation recognized the need for abandoning these artificially high price levels and on March 14, 1940, Barney of the foundation wrote to King of du Pont referring to a "quotation from General Mills at a price of 60 cents per million" and stated:

> This will acknowledge receipt of your letter of March 5 regarding the maximum and minimum price provisions with respect to the baking field. Shortly, Ward [Ross, of the Foundation] will send Art [Connolly, of du Pont] either a letter agreement or supplemental contract deleting this provision from the contract.

On July 19, 1940, Connolly wrote Ross again, asking elimination of the price-fixing provision and finally on July 30, 1940, Ross, of the foundation, wrote to du Pont deleting the price-fixing paragraph from article 2 (C) of the agreement.

PRICE

Du Pont's aim in all of its vitamin D operations was to obtain high, noncompetitive prices for its products. This thought is expressed time

Digitized by Google

and time again. A memorandum dated July 26, 1932, from Bradshaw to Atkins, both of Acetol, states:

This morning I reported to Mr. Protto and Mr. Robinson regarding conversation with Dean Russell and also the known facts concerning Lever Bros. business. It was Mr. Protto's feeling that we should raise our prices as much as possible and "should" not sell the material cheap.

The next day Atkins replied:

It seems obvious to me that we should always try to get the maximum price for any of our goods, keeping in mind the possible potential volume and competitive conditions.

According to authentic price information which we have secured, Fleischmann have been selling and offering vitamin D at slightly less than $1.00 per 1,000,000 Steenbock rat units. This is what influenced my suggested price of $1.00 to Lever Brothers, and I was very much surprised when you informed me that Fleischmann was not in position to furnish irradiated ergosterol. If this were true, I apparently had gone too low on our initial price in view of the fact that we were the exclusive source of supply.

The profit levels resulting from the foundation's activities were enormous. In a letter dated March 9, 1938, addressed to Ward Ross, of the foundation, King, of du Pont, states:

With respect to the Chesney matter, all I know is that 35 cents per million units was quoted to General Baking Co.

MILK

Vitamin D is of the greatest importance to expectant and nursing mothers, infants, and children and, consequently, milk is one of the most natural and most important vehicles for this vitamin. The Council on Foods of the American Medical Association stated in the Journal of the American Medical Association for January 16, 1937, "Of all the common foods available, milk is most suitable as a carrier of added vitamin D. Vitamin D is concerned with the utilization of calcium and phosphorus, of which milk is an excellent source." Next to the pharmaceutical industry, milk was probably the most promising outlet for vitamin D from a profit standpoint. The foundation therefore became active in promoting the use of vitamin D in the milk industry.

EVAPORATED MILK

On November 1, 1938, the foundation granted licenses to five producers of evaporated milk, the Borden Co., Carnation Co., Indiana Condensed Milk Co., Nestle's Milk Products, Inc., and Pet Milk Co., to activate evaporated milk. The agreements allocate the evaporated-milk field exclusively to these five producers.

Like the foundation's other agreements, these evaporated-milk agreements provide for the maintenance of the division of fields. Article XX, in protecting the evaporated-milk field, states:

The licensor agrees that in all licenses granted by it for the activation of fluid milk by the use of irradiated ergosterol or by direct application of ultra violet rays, it will incorporate a provision preventing the use of or sale of such activated milk by such licensees for the manufacture of activated unsweetened evaporated milk.

Digitized by Google

The rights of the evaporated-milk producers were similarly restricted to prevent encroachment on other exclusive fields. Article XII specifically protects the pharmaceutical field by providing—

* * * said evaporated milk shall not be intended or sold as a cure for rickets.

The other fields of use of vitamin D are protected from invasion by activated evaporated milk by article IX, which provides:

The licensee agrees that it will not knowingly directly or indirectly sell its unsweetened evaporated milk activated under this license to others * * * as a source of vitamin D for any other product when such product is intended to be sold or resold on a commercial basis.

FLUID MILK

There are several methods by which fluid milk may be activated, and the foundation has issued licenses for each of these methods. In one method, irradiated yeast is fed to cows to increase the vitamin D content of the milk; in the second method, the milk is irradiated directly; and in the third method, an activated concentrate is introduced into the milk.

The bill of particulars in the *Vitamin Technologists* suit lists 138 dairies licensed to activate milk by feeding irradiated yeast to cows. In this agreement with West Haven Creamery, Inc., which is typical of all of the licenses of this class, the foundation—

does license and empower the licensee to purchase from Standard Brands, Inc., dried yeast antirachitically activated * * * upon the following terms and conditions:

First. The licensee shall buy and use such yeast for no other purpose than that of feeding cows to impart antirachitic qualities to milk.

* * * * * * *

Fourth. The licensee shall not sell any of its antirachitically activated milk to others for use or incorporation in any other marketed product when vitamin D or antirachitic claims are made or intended to be made for such other marketed product.

Fifth. The activated yeast purchased by licensee pursuant to this license shall not be resold or otherwise used except for feeding the same to licensee's animals, pursuant to the conditions of this license.

The CHAIRMAN. In other words, under these licenses, they are not only licensed in the production of the product, but they also stipulate to whom those products could be sold and, to the purchaser, the purpose for which the products could be used.

Mr. BERGE. They covered all those things.

The CHAIRMAN. If a small creamery wanted to buy some of that treated milk, the dairy couldn't sell it to the creamery, although the dairy had produced the milk. The manufacturers of yeast sell it to dairies and farmers unless they get a license to permit the purchase from the manufacturer.

Mr. BERGE. That's right.

The CHAIRMAN. I wonder when they are going to ask babies to get licenses to take the pills.

Mr. BERGE. The Steenbock patents do not purport to cover anything more than a process of irradiating or an irradiated product. Under no circumstances could the milk from an irradiated-yeast-fed cow be an infringement of the Steenbock patents. Article 4 is a barefaced attempt to carry out the artificial division of fields. Milk from an

Digitized by Google

irradiated-yeast-fed cow could, for example, be used in the commercial making of bread, but such use would be an invasion of the exclusive bread and breadstuffs field. It was, therefore, necessary for the foundation to insert this limitation in the West Haven Creamery's license even though the limitation was entirely outside the Steenbock patents.

The prohibition of resale in article 5 likewise lacks any taint of legal justification. A patentee's right under a patent is completely exhausted by the first sale of the patented product. Here again the foundation is seeking to prevent any use of the irradiated yeast which may in any way conflict with the division of fields.

As the demand for activated milk increased, the addition of concentrates was accepted by the medical profession. This business was so attractive that the foundation decided to engage in the sale of these concentrates for addition to milk. The foundation did not, however, wish to enter a market in which any competition existed, and since Standard Brands had rights in this field it was essential that the Standard Brands competition be eliminated. In the agreement of February 1, 1939, the foundation agreed to pay Standard Brands 40 percent of the profits derived by the foundation from the sale of concentrates in return for Standard Brands' withdrawal and agreement not to compete.

POULTRY FEED

Vitamin D–3 is of the utmost importance in the poultry industry since it is essential for the prevention and cure of rickets and for bone development, egg production and hatchability. Food and Life, the Yearbook of Agriculture for 1939, published by the United States Department of Agriculture states, on page 818, that the vitamin D requirements of chickens and turkeys are as follows:

CHICKENS

	Chick units per pound of feed
Growing chicks	180
Laying stock	360
Breeding stock	540

TURKEYS

Growing poults	360
Breeding stock	540

Prior to the war some of this vitamin D could be obtained from cod- and other fish-liver oils, but at the present time the requirements must be obtained almost exclusively from synthetic vitamin D.

Even apart from wartime shortages, synthetic vitamin D presents certain advantages over fish-liver oils. The synthetic product may be used for forced feeding without adversely affecting the flavor of the poultry, while too generous use of fish-liver oils results in a somewhat fishy flavor.

The size of the poultry market in the United States involves almost astronomical figures. The crop report of September 1, 1943, of the United States Department of Agriculture on poultry and egg production states that there were over 316,000,000 laying hens, over 318,000,000 pullets, and over 224.000,000 chicks. The egg production for August 1943 was 3,863,000,000. This crop report also states that the average

Digitized by Google

cost of feed for farm poultry ration on August 15, 1943, was $2.13 per hundred pounds. Dr. Harry Titus, of the Poultry Nutrition Section of the Bureau of Animal Industries of the Department of Agriculture, estimates that 25,000,000 tons of commercial mixed feed is used annually in the poultry industry and that 75 percent of this feed is fortified with vitamin D.

The wartime demands on meat make the poultry market unusually important and any artificial restraints or artificial price levels affecting the poultry market are of the most serious national importance.

The discovery upon which Steenbock's patent No. 1,680,818 is based is that certain substances, known as provitamins, take on antirachitic properties when irradiated with ultra-violet light. These provitamins are sterols which may be obtained from either vegetable or animal sources and the effectiveness of the irradiated product is dependent upon the nature of the provitamin.

In the early days vegetable provitamins were used almost exclusively, but it was subsequently found that the animal provitamins were superior. Vegetable provitamins were unsuitable for poultry feeding and the exploitation of this market awaited the development of the animal provitamins, cholesterol and 7-dehydrocholesterol.

The animal- and poultry-feed field had been exclusively allocated to du Pont and its predecessor, Acetol. This exclusive arrangement high lights the artificial nature of the foundation's division of fields. In the case of cows, vitamin D in the feed will result in a vitamin-D content in the milk. Vitamin D may also have some antirachitic effect on the cow itself. In interpreting this provision of its agreement with the foundation, du Pont was obliged to consider the question whether the effect of the vitamin-D feed is in the cow or in the milk. Finally, however, du Pont resolved the doubt in its own favor. A letter dated February 20, 1935, addressed to Kupperian of du Pont, from Connolly, a du Pont attorney, states:

> Irradiated cholesterol may, therefore, be used in feed for cows regardless of whether its purpose is to enhance the vitamin-D content of the milk or to prevent rickets in the cow itself.

Prior to 1936 du Pont recognized the importance of the animal sterols, cholesterol and 7-dehydrocholesterol, in the poultry-feed field. Du Pont immediately set out to secure a monopoly over these provitamins and through them to control the entire poultry-feed field. The first step in this direction is described in a letter dated January 21, 1936, from King, of du Pont, to Nielson, of Abbott, which states:

> We were, of course, largely interested in the poultry field, and to protect our position had made tentative arrangements to secure all of the available cholesterol in the country, or perhaps we might say, in the world.

Apart from attempting to corner the sources of animal sterols, du Pont also sought exclusive rights in the field of animal sterols within the licensing scheme of the foundation. The agreement of November 15, 1935, between the foundation and du Pont grants du Pont an exclusive license to irradiate sterols from animal sources. When the foundation wished to grant new licenses and submitted the proposed licenses to du Pont for approval, du Pont insisted upon retaining exclusive rights in the animal provitamin field. In a report to the

Digitized by Google

executive committee of du Pont recommending approval of the foundation's license to Merrell, E. G. Robinson states:

> The foundation now wishes to grant a license to the William S. Merrell Co. of Cincinnati, Ohio, limited to vitamin D from nonanimal sources for sale only as medicinals or pharmaceuticals for human use, which this department is willing to approve. It is limited to nonanimal sources in the pharmaceutical field and, therefore, we do not think it will materially interfere with our own developments. Also, the foundation is able to grant a license with respect to yeast ergosterol without our permission, since that product is not in our license field; and if the license to Merrell is limited to yeast we will not have the opportunity of selling Merrell our own [irradiated] ergosterol.

Thus, while du Pont wishes to protect its animal-sterol field it did not wish the Merrell license so limited as to deprive du Pont of a potential market for nonyeast ergosterol. In both of these desires the foundation was most willing to cooperate.

DU PONT-ALBA-PHILIPS ARRANGEMENTS

Alba Pharmaceutical Co. and N. V. Philips Gloeilampenfabrieken, of Holland, did some development work in the vitamin D field and obtained patents relating to the production and use of animal sterols as sources of vitamin D. Despite its exclusive license from the foundation and its corner on the cholesterol market, du Pont found it desirable to enter into license agreements with Alba and Philips to round out the control over the animal-sterol field. These license agreements bring Alba and Philips into the orbit of the foundation's licensing scheme and pile a new cartel on top of the old. The agreements and relationships between these parties are quite involved and an exposition of them will be reserved for a more complete report.

CONCLUSION

All of the foregoing restrictions and controls were practiced by the foundation under the guise of an exercise of its rights under the Steenbock patents. For years the foundation was successful in avoiding any test of the validity or scope of these patents, but, finally, on September 15, 1939, the foundation filed suit against Vitamin Technologists, Inc., in the southern district of California charging infringement of Steenbock patents Nos. 1,608,818, 1,871,136, and 2,057,399. The validity of these patents was finally considered by the Circuit Court of Appeals for the Ninth Circuit in *Vitamin Technologists, Inc.*, v. *Wisconsin Alumni Research Foundation* (136 F. (2d) 318). In arriving at its decision the court relied almost entirely on the testimony of Steenbock himself and another expert witness presented by the foundation. The court states at page 319:

> Many years before the application, science had discovered that the sun's rays shining on cut alfalfa hay cured in the field was an antirachitic food for pigs. Prior to 1923 foundation's expert witness, Dr. Nelson, testified that it was shown as a natural process that vegetable matter, not only cut hay but copra, the cut meat of the coconut, when exposed to the sun's ultraviolet rays, would produce in it vitamin D.
>
> Steenbock himself verified the facts concerning alfalfa by the discovery that when cured out of the sunlight it lacked the antirachitic quality created when cured in the field.
>
> We thus have the claimed inventor proving that is from the ultraviolet rays of the sun that the alfalfa acquires its vitamin D, that is by the process claimed

Digitized by Google

by him as patentable. If the patent be valid, it is thus seen that the farmer is an infringer when he exposes his cut alfalfa to the ultraviolet rays of the sun long enough to make it antirachitic. So also the long-previously established practice of the radiation of milk by the mercury vapor lamp would infringe the monopoly of Steenbock's patent because admittedly, in its customary use it would produce in the milk vitamin D.

The court then says (p. 321):

We hold that the first patent (1,680,818) is invalid because it was old in the art to expose various foods of dietary value, such as olive oil and milk, to lamp radiated ultraviolet rays, and ages old to expose cut vegetable matter to such rays of the sun.

The same reasoning makes invalid the second patent (1,871,136) * * *.

* * * * * * *

* * * the third patent (2,057,399) is void for a double attempt to patent an unpatentable process.

In a concurring opinion at page 322, Judge Healy states:

But I agree that Dr. Steenbock did not invent anything.

Thus, this entire scheme for exploiting the public was based upon patents which in their court test were invalidated on evidence and testimony of the inventor and other witnesses supplied by the foundation. Not only were the practices and restrictions of the foundation indefensible in themselves, but even the basis of the practices and restrictions was held to be void and of no effect.

Probably one of the best summaries of the foundation's practices is contained in the statement of Dr. Morris Fishbein, president of the American Medical Association, who said:

The sun in the sky should be freely available to all who wish to use it. Yet it has been hinted that there are some concerned with patents on vitamin D who would even inhibit investigators from experimenting with the sun.

The CHAIRMAN. If there had been a uniform policy on the disposition of patents and research findings procured by Government funds in an agency such as is contemplated in S. 702 to protect the public interest and to promote the widest possible use of Government-financed research, would it be likely that a monopoly such as has been described here today would be created, and that the curbing of research and further development by private enterprise would be possible?

Mr. BERGE. I don't see how it could have been. I think if some such plan as that contemplated by this bill had been in effect, it would have covered such a situation, and that if the research that Steenbock did, and that went into developing the process of utilizing vitamin D, had been done under the plan contemplated by S. 702, these abuses could not have been possible, as I see it.

The CHAIRMAN. Mr. Berge, in other words, Steenbock was not a party, really, to this. He offered his process originally to the University; is that not right?

Mr. BERGE. Yes.

The CHAIRMAN. And the foundation later took it up.

Mr. BERGE. He offered it to the university who turned it down, and later the foundation took it up.

The CHAIRMAN. The reason I asked that last question is this: That Dr. Egloff, who is director of research of Universal Oil Products Co., which is a patent monopoly, has made his principal complaint on S. 702 that it puts a strait jacket on research and would hold back

Digitized by Google

public research of any kind; that it also puts a strait jacket on private research. Can you, in your wildest vision, visualize a worse strait jacket than the one put on this, which was a publicly developed process?

Mr. BERGE. I can't think of one. I also can't see how there can possibly be any merit to the contention that such a plan as the proposed bill contemplates could put a strait jacket on development. Certainly a public agency, assuming an active interest in promoting and directing research, with provisions for unrestricted licensing of the patents developed at such public expense, whatever else may be conjured up in criticism of it, cannot be criticized as being restrictive.

The CHAIRMAN. You remember back in about 1933, when the papers were full of an expression called "rugged individualism" as being an American characteristic. It was largely emphasized by some of the concerns that we have mentioned in these hearings, as I remember. Can you see any tendency toward rugged individualism in this history or the history produced last Thursday, or can you see any opportunity for rugged individualism by industry?

Mr. BERGE. I think these situations which were referred to last week, and which I developed today, offer the greatest threat to rugged individualism that is present on the economic scene today. I think if there is anything that tends toward defeating freedom of enterprise, and toward creating tight control and regimentation within an industry, it is these restrictive devices, through cartel arrangements of the kind discussed the other day, and through an elaborate system of licensing control, such as I have discussed today. Of course, my own private opinion is that if allowed to continue indefinitely, they will choke private enterprise to a point where some more extreme form of public control will be an absolute requisite, if we are to function at all, a form more extreme, I am sure, than we should like to have. If we are going to have free enterprise it must have some room to stretch around in, and these private controls certainly shut off development in an industry and, for a few years, perhaps, will assure high profits to particular groups, but in time they will have such a stifling effect on our economy that we will all go under. That, of course, is my private opinion, but I think it follows, as I see the picture.

The CHAIRMAN. Still speaking as one lawyer to another and not in an official capacity, do not these practices of artificial price level fixing raise the cost of living, thereby necessitating an artificial wage level also, and thereby taking us out of the international field of commerce, to a certain extent, which is the purpose of cartels with Farben and various other foreign concerns whose purpose it is to move us out as competitors in the international field?

Mr. BERGE. I think that's correct. In the domestic economy, too, restrictions on production, price-fixing arrangements such as we have discussed today, I think, can have no worse effect than to reduce the consumption of the product, and then these direct restrictions reduce the production. Now, the total effect is to mean less labor, fewer people producing, and that means, again, less purchasing power and we get a vicious downward spiral. I think our ideal ought to be toward the full production with a minimum of restrictions, and where restrictions are necessary because of some special conditions in an industry, I think they must then be under Government control. I hope and I

Digitized by Google

believe that in the long run there won't be need for many restrictions on production or price restrictions at all, but where that may be necessary, because of some special reason, we can't leave it to the private concerns, because then the public interest is left out of account. The ideal is maximum production, entirely free price competition, and, I think, licensing of patents without restriction, either free, or at least with reasonable royalties, so that everybody with vim, vigor, interest, and capacity may go into a field and risk his money in developing an enterprise.

I think everyone should have his chance. That's the spirit which developed America, and I think it's the only spirit that can save the kind of economy we want to preserve.

The CHAIRMAN. I was told some months ago by a man connected with one of our large radio patent groups that they removed their restrictive practices when they discovered their profits dropping off. They did so as an experiment and entered into a system of licensing anybody, thereby forcing all the others to come into the same system, and, strange to say, the profits of that particular group increased tremendously, because whereas formerly you would have 1 radio to every 15 or 20 homes, it was suddenly discovered that when the restrictions were removed the price of radios dropped, competition and cost of production became the governing factor, and then we had 2 or 3 radios in every home. So that the reduction, in reality, coupled with free competition between manufacturers as to the best manufacturing methods, produced, to this particular group, a greater profit than the restrictive measures with the high royalties had formerly produced.

Mr. BERGE. That's certainly interesting, and you might say it's a laboratory demonstration of the theory I have been expounding. I have a notion that would be found to be true in the whole field.

The CHAIRMAN. Don't you think also that eventually practices of this kind are going to lead to governmental interference in the patent field to such an extent that the patent structure will be far more seriously affected than would the proposal in 702, which does not touch the private patent structure but does make more available the patents developed with public funds?

Mr. BERGE. My own opinion is that that is what will happen if some more moderate measures that don't fundamentally affect the patent structure are not adopted.

Mr. SCHIMMEL. There are a couple of points I'd like to make. Would you minimize Steenbock's discoveries because they were not patentable?

Mr. BERGE. No.

Mr. SCHIMMEL. I think that's a troublesome point there. Would the fact that the court ruled they are not patentable minimize the scientific merit of the discovery?

Mr. BERGE. I don't think it necessarily would. Of course, we are not scientists, but it seems to me that the idea should be to encourage scientific research and development to get processes improved, whether or not the new twists that are developed are patentable. This may have been a very important contribution or it may not have been. I don't know. It seems to me, however, that the fact of whether or not it is patentable should not determine the kind of development it

Digitized by Google

should enjoy. I think that, patentable or unpatentable, any improvements, however slight, in scientific processes ought to have a clear field for development on their merits.

Mr. SCHIMMEL. That raises a very important point about this whole testimony, Mr. Berge. Here we have a development financed by Federal funds, as I understand your testimony.

Mr. BERGE. In part it was; yes.

The CHAIRMAN. And the rest was by State funds.

Mr. SCHIMMEL. Do you have any record of any Federal agency having made any study to see in what way this development should be utilized?

Mr. BERGE. You mean the Steenbock development?

Mr. SCHIMMEL. Yes.

Mr. BERGE. We don't have any record that any Federal agency ever considered the matter at all.

Mr. SCHIMMEL. Ten years later we find that a legal division of the Federal Government has come in and made an exhaustive study of the problem, because certain practices, which may or may not border on the criminal, have taken place with respect to that development.

Mr. BERGE. That's right.

The CHAIRMAN. In other words, certain practices which restricted the utilization of it were studied.

Mr. SCHIMMEL. In other words, we are operating, in the Federal Government today, with a legal agency to take care of the crime after it has been committed. We have no operating agency in the scientific field to see that the crime is not committed in the first place.

Mr. BERGE. That's right; that's right. While this doesn't reflect an answer to your question, Mr. Schimmel, I think the question of legal violation is involved. I might repeat what I said at the first, but I think it's a little clearer now and that is that this matter was investigated because of what seemed to be abuses in the control of the development of the process and all these restrictive practices. During the course of the investigation, however, it also became clear that the whole system was pyramided upon the patent itself, and we learned of this private patent litigation, out of which, conceivably, the whole structure might topple because of the invalidity of the patents. Antitrust action was deferred pending the outcome of that litigation, and now the Court of Appeals has held the patent invalid. I don't know whether the matter will be taken up on appeal or not, but of course if the lower court decision stands, that may raise a question as to whether it is essential to proceed by antitrust proceedings at all. The explanation of our delay is found in the fact that the whole basic patent was being questioned in this private litigation.

The CHAIRMAN. Mr. Berge, that brings up one point that I think is interesting, and that is that there are many unpatentable research developments that can be of tremendous value to the people of the United States, and they are not going to be gone into by private research because there is no chance for profit. Therefore this fundamental research must be carried on to some measure out of public funds from some source, and at the present time, except in the field of agriculture, we have no such funds.

Mr. SCHIMMEL. I think the very interesting point about this whole testimony is that we were spending probably one-tenth or one-twentieth

Digitized by Google

as much for scientific research in 1929 as we are spending today. When I say "we" I mean the Federal Government. Here we have an example of the result of that. If that research is not adequately protected, we get the result which Mr. Berge has brought out today.

Mr. BERGE. There is one correction for the record that should be made because we inadvertently, on page 9 of this mimeographed copy, mention Nielsen, of E. R. Squibb & Sons. It should read Nielson, of Abbott Co.

The CHAIRMAN. We will recess now until further call when Mr. Berge's further testimony is prepared.

(Whereupon, at 12:20 p. m., the subcommittee recessed subject to the further call of the Chair.)

EXHIBIT No. 155. VITAMIN D

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., October 22, 1943.

Mr. R. M. HUNTER,
Department of Justice, Washington, D. C.

DEAR MR. HUNTER: This will confirm my statement to you by telephone that the research of Dr. Harry Steenbock, a staff member of the Wisconsin Agricultural Experiment Station, has been supported in part by Federal-grant funds. In view of the many lines of work involved in the Wisconsin station nutritional research program, it is not possible to estimate with any degree of certainty the amount of Federal-grant funds or the amount of State funds properly chargeable to the specific work of Dr. Steenbock relative to irradiation of foods. The facts of the case are briefed as follows:

The irradiation of foods is one of several findings of practical significance resulting from a program of research initiated at the Wisconsin station in 1906 immediately following the approval of the Adams Act of March 16, 1906.

The total program up to 1924 was financed under two Federal-grant fund projects and from contributions from State funds. These projects were started shortly after the Adams funds became available under the following titles:

No. 3. Importance of Mineral Constituents of Feeding Stuffs in the Growth and Development of Farm Animals.

No. 4, Comparison of Nutrients from Single Plant Sources and from Different Plants on Development of Animals.

As the investigations proceeded a number of important findings relative to animal nutrition were developed, for example, in 1914, the research showed that vegetable fats when added to certain basic diets did not induce growth, but butter and some other animal fats did.

In 1915 it was found that 1 percent ash enabled animals to grow, 2 percent enabled reproduction, and 3 percent enabled them to raise young. The following year (1916) advances were made in the determination of the chemical structure and stability of what was then known as accessory bodies A and B (now called vitamins A and B). In 1918 animal growth was inhibited by withholding calcium, potassium, and chlorine from their diet. In 1919 the research workers found that white corn is deficient and yellow corn rich in vitamins A and B. In 1920 it was found that vitamin A in yellow corn is confined to the endosperm and not present in the embryo. In 1923 they found greater storage of calcium in cows fed fresh green alfalfa, and found that many commercial mineral mixtures contain useless ingredients and showed the value of bonemeal, wood ashes, and ground limestone.

Irradiation of foods.—In 1923 the discovery was made that certain foods when irradiated with ultra-violet light acquire antirachitic value. This was published in 1924 in the following paper:

Fat-soluble Vitamins. XVII, The Induction of Growth-promoting and Calcifying Properties in a Ration by Exposure to Ultra-violet Light, J. Biol.

Digitized by Google

Chem., 61 405–422 (1924), by H. Steenbock and A. Black (Wisconsin Station).

Even in 1923 and 1924 other new findings and advances were made. For example, in 1924, it was announced that the inorganic phosphorus content of the blood was lower in animals enclosed in dark pens than those in pens receiving light.

The investigations in connection with this program of research thus included studies of different feeds and combinations of feeds and supplements for different animals under different environmental conditions.

Research in a field like animal nutrition is inevitably a world-wide undertaking in which each worker benefits from the findings of other fellow-workers who publish their results, and they in turn benefit from what he accomplishes. Dr. Steenbock has publicly acknowledged his indebtedness to the research in vitamin D conducted at the Lister Institute and by Mendel and Osborne.

In a very real sense, therefore, it can never be possible to measure in financial terms, or in any other accurate manner, the aid which a given scientist or inventor received from a particular fund of money. The research conducted at the Wisconsin station with money supplied from the Adams fund, when reported in the scientific literature, undoubtedly aided nutrition workers throughout the world in carrying forward their researches.

It, therefore, should be emphasized that the mere receiving of part of his salary from the Adams fund allotment to the Wisconsin station was only one of the very many sources of aid to the research which he has had underway during the past 30 years. It is impossible to evaluate these contributions in terms of money, or to allocate equities belonging to appropriating agencies or to scientists working in other laboratories throughout the world.

Very truly yours,

JAMES T. JARDINE.
Chief, Office of Experiment Stations.

IN THE UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF CALIFORNIA

CENTRAL DIVISION

No. 565–M Civil

Wisconsin Alumni Research Foundation, a Corporation, Plaintiff, v. *Vitamin Technologists, Incorporated, a Corporation, Defendant*

PLAINTIFF'S BILL OF PARTICULARS AND MORE DEFINITE STATEMENT

Pursuant to orders of this Court of November 29, 1939, and December 8, 1939, requiring plaintiff to comply with certain paragraphs of defendant's motion for an order requiring plaintiff to file a bill of particulars or a more definite statement under Rule 12 (e) of Federal Rules of Civil Procedure, plaintiff submits the following particulars with respect to paragraphs 1, 2, 3, 4, 5, 7 (a), 7 (b), 10 (a), 11 (a), and 11 (b) of defendant's motion:

1. Plaintiff is informed and believes, and therefore, avers that the following claims of the patents in suit have been infringed by defendant:

Patent No. 1,680,818—Claims 1, 2, 3, 5, 6, and 8.
Patent No. 1,871,136—Each and every claim.
Patent No. 2,057,399—Each and every claim.

Plaintiff's specification of the foregoing claims of the patents in suit is based upon (a) plaintiff's knowledge of the products sold by defendant, (b) information secured as a result of plaintiff's inspection of certain of the processes and equipment employed by defendant in its plant at 947 South Maple Avenue, Los Angeles, California, pursuant to the order of this court of November 29, 1939, regarding such inspection; (c) information given orally to plaintiff's representatives by certain of defendant's officers and attorneys at the time of such inspection; and (d) defendant's description of its alleged secret process, filed by defendant and served upon plaintiff's attorneys pursuant to said order of November 29, 1939. Plaintiff reserves the right upon final hearing to differently specify claims of the patents in suit as charged to infringe should further information be hereafter secured by plaintiff, justifying such specification.

Digitized by Google

2. The processes and products of defendant are charged to infringe the above specified claims of the patents in suit as follows:

(a) Defendant's alleged secret process, as set forth in defendant's description thereof, infringes claims 1 and 8 of patent No. 1,680,818 and claims 1–3, both inclusive, of patent No. 1,871,136.

(b) The product of defendant's alleged secret process infringes claims 5 and 6 of patent No. 1,680,818 and claims 4–7, both inclusive, of patent No. 1,871,136.

(c) Defendant's process of irradiating ergosterol in sesame oil infringes claims 1, 2, 3, and 8 of patent No. 1,680,818 and claims 1–3, both inclusive, of patent No. 1,871,136.

(d) The product of the process referred to in (c) above, namely, irradiated ergosterol in sesame oil, infringes claims 5 and 6 of patent No. 1,680,818 and claims 4–7, both inclusive, of patent No. 1,871,136.

(e) Defendant's process of irradiating ergosterol in alcohol infringes claims 1 and 8 of patent No. 1,680,818 and claims 1–3, both inclusive, of patent No. 1,871,136.

(f) The product of the process referred to in (e) above, namely, irradiated ergosterol in alcohol, infringes claim 5 of patent No. 1,680,818 and claims 4–7, both inclusive, of patent No. 1,871,136.

(g) Defendant's product in dry form, namely, irradiated ergosterol combined with a dry carrier, infringes claim 5 of patent No. 1,680,818 and claims 4–9, both inclusive, of patent No. 1,871,136.

(h) Defendant's process of irradiating yeast infringes claims 1 and 8 of patent No. 1,680,818 and claims 1, 2 and 4 of patent No. 2,057,399.

(i) The product of the process referred to in (h) above, namely, irradiated yeast, infringes claim 5 of patent No. 1,680,818 and claim 3 of patent No. 2,657,399.

3. Attached hereto as "Exhibit A" is a true and correct copy of the assignment referred to in Paragraph 5 of the complaint.

4. Attached hereto as Exhibit "B" is a true and correct copy of the assignment referred to in Paragraph 7 of the complaint.

5. Attached hereto as "Exhibit C" is a true and correct copy of the assignment referred to in paragraph 9 of the complaint.

7 (a) Attached hereto as "Exhibit D" is a document entitled "Names and Addresses of Certain Present and Former Licensees of Plaintiff under the Steenbock patents."

7 (b) Attached hereto as "Exhibit E" are true and exact copies of license agreements between plaintiff and those licensees referred to in paragraph 7 (a) above, now operating under said license agreements, the set of copies being collectively entitled "Copies of License Agreements."

10 (a) In response to paragraph 10 (a) of defendant's motion, plaintiff refers to paragraph 13 of the complaint. Plaintiff will prove that defendant's infringement of the patents in suit was willful by showing (1) that defendant knew of the existence of the patents in suit at the time it commenced the practices complained of and (2) that defendant continued said practices after being notified of its infringement by plaintiff.

11 (a) Plaintiff notified defendant in writing of its infringement of the patents in suit by registered letter, dated October 26, 1936. Plaintiff reiterated its charges of infringement in a letter to plaintiff's counsel dated November 24, 1936.

11 (b) Attached hereto as "Exhibit F" are true and exact copies of the two written notices of infringement given, sent and delivered by plaintiff to defendant.

Dated Chicago, Illinois, January 18, 1940.

WISCONSIN ALUMNI RESEARCH FOUNDATION,

By GEORGE I. HAIGHT,
FRANK PARKER DAVIS,
WARD ROSS,
LEWIS W. ANDREWS,
MORTIMER KLINE,

Its Attorneys, 414 Union Oil Bldg., 617 W. 7th St., Los Angeles, California.

EXHIBIT A

Whereas, I, HARRY STEENBOCK, of Madison, County of Dane and State of Wisconsin, have invented a certain new and useful invention for Antirachitic Products and Process, for which I have made application for Letters Patent of the United States, Serial No. 723,171, filed June 30, 1924; and

Digitized by Google

Whereas, the WISCONSIN ALUMNI RESEARCH FOUNDATION, a corporation not for pecuniary profit, is desirous of acquiring an interest in said invention, and in the Letters Patent to be obtained therefor;

Now, therefore, to all whom it may concern, be it known that for and in consideration of the sum of ten dollars ($10.00), to me in hand paid, receipt of which is hereby acknowledged, I, the said HARRY STEENBOCK, have sold, assigned, and transferred and by these presents do sell, assign, and transfer unto the said WISCONSIN ALUMNI RESEARCH FOUNDATION, the whole right, title and interest in and to the said invention for Antirachitic Products and Process, and any improvements thereon which I have made or may hereafter make, and in and to the Letters Patent and the applications for Letters Patent therefor, aforesaid, and to any foreign applications for patent pending thereon, or to be filed thereon, and upon improvements upon the same and all other foreign rights, the same to be held and enjoyed by the said WISCONSIN ALUMNI RESEARCH FOUNDATION for its own use and behoof and for the use and behoof of its legal representatives, to the full end of the term for which said Letters Patent are or may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

In testimony whereof, I have hereunto set my hand and affixed my seal at Madison, in the County of Dane, and State of Wisconsin, this 18th day of February 1927.

[SEAL] HARRY STEENBOCK.

Witnesses:

(Illegible) BROWN,
L. W. HANKO.

STATE OF WISCONSIN,
County of Dane:

On this 21 day of February 1927, personally appeared before me, the above named HARRY STEENBOCK and acknowledged that he executed the above instrument as his free act, and deed for the purposes therein set forth.

[SEAL] R. J. TOEPFER,
Notary Public, Dane County, Wis.

My commission expires September 11, 1927.

RECORDED: Transfers of Patents, U. S. Patent Office, Feb. 26, 1927. Liber R129 Page 582.

THOMAS E. ROBERTSON,
Commissioner of Patents.

EXHIBIT B

EXHIBIT C

EXHIBIT D

Names and addresses of certain present and former licensees of plaintiff under the Steenbock patents

Name of company	*General scope of licenses*
The Borden Co., New York, N. Y.	Irradiated unsweetened evaporated milk.
Carnation Co., Milwaukee, Wis.	Do.
Indiana Condensed Milk Co., Indianapolis, Ind.	Do.
Nestle's Milk Products, Inc., New York, N. Y.	Do.
Pet Milk Co., St. Louis, Mo.	Do.
Abbott Laboratories, North Chicago, Ill.	Irradiated vitamin D pharmaceutical products for use in certain human medicines, together with the right to sell these products in the small animal field, such as dogs, cats, and foxes.
Mead Johnson & Co., Evansville, Ind.	Do.
Parke, Davis & Co., Detroit, Mich.	Do.
E. R. Squibb & Sons, New York, N. Y.	Do.
Winthrop Chemical Co., New York, N. Y.	Do.

Digitized by Google

Names and addresses of certain present and former licensees of plaintiff under the Steenbock patents—Continued

Name of company	*General scope of licenses*
E. I. DuPont de Nemours & Co., Wilmington, Del.	Irradiated sterols derived from any source other than yeast. Irradiated products in stock, poultry, and/or animal feeds. Irradiated products in bread or breadstuffs.
Ayerst, McKenna & Harrison (U. S.), Ltd., Rouses Point, N. Y.	Incorporation of irradiated ergosterol in glucose D (a food product).
Quaker Oats Co., Chicago, Ill	Cereal products including breakfast foods, but excluding crackers, biscuits, cookies, and bread and/or breadstuffs, stock and poultry feeds, also licensed.
The Borden Co., New York, N. Y	Incorporation of irradiated Vitamin D in Dryco and Klim (dried milk products).
The Wander Co., Chicago, Ill	Incorporation of irradiated vitamin D in Ovaltine.
R. B. Davis & Co., Hoboken, N. H	Incorporation of irradiated vitamin D in Cocomalt.
Commander-Larabee Milling Co., Minneapolis, Minn.	Irradiated vitamin D in flour.
Loose-Wiles Biscuit Co., Long Island City, N. Y.	Incorporation of irradiated vitamin D in crackers.

All of the above-mentioned companies are licensed under United States Letters Patent Nos. 1,680,818; 1,871,136 and 2,057,399, with the exception of the following companies which are licensed under United States Letters Patent No. 1,680,818 only: Ayerst, McKenna and Harrison (U. S.) Ltd., Rouses Point, N. Y.; Commander-Larabee Milling Co., Minneapolis, Minn.; R. B. Davis & Co., Hoboken, N. J.

Fluid milk companies licensed to produce irradiated vitamin D milk

Beverly Dairies, Ltd., Glendale, Calif.
Annette's Dairy, Savannah, Ga.
Arden Farms, Inc., Los Angeles, Calif.
The Borden Co., Los Angeles, Calif.
Dairy Specialties, Inc., Chicago, Ill.
The Borden Co., Sacramento, Calif.
Qualitee Dairy Products Co., San Diego, Calif.
Beatrice Creamery Co., Denver, Colo.
Foland's Dairy, Bridgeport, Conn.
Mitchell Dairy, Bridgeport, Conn.
The J. H. Story and Son Dairy, New Haven, Conn.
Strawberry Hill Dairy, Inc., Norwalk, Conn.
Fraim's Dairies, Wilmington, Del.
Adohr Milk Farms, Los Angeles, Calif.
The Borden Co., Chicago, Ill.
Bowman Dairy Co., Chicago, Ill.
Hunding Dairy Co., Chicago, Ill.
Borden's Dairy Delivery Co., Inc., Sacramento, Calif.
Carlson-Frink Co., Denver, Colo.
Sidney Wanzer & Sons, Chicago, Ill.
School Dairy Co., Michigan City, Ind.
Iowana Farms, Davenport, Iowa.
Old Tavern Farm, Inc., Portland, Maine.
David Buttrick Co., Arlington, Mass.
Torrington Creamery, Inc., Torrington, Conn.
Thompson's Dairy, Inc., Washington, D. C.
Whiting Milk Co., Boston, Mass.
Wood Brook Farms, Metuchen, N. J.
Franklin Lake Dairy, Midland Park, N. J.
O'Dowd's Dairy, Caldwell, N. J.
Port Murray Dairy Co., Inc., Port Murray, N. J.

Digitized by Google

Fluid milk companies licensed to produce irradiated vitamin D milk—Continued

The Borden Co., Detroit, Mich.
Ira Wilson & Sons Dairy Co., Detroit, Mich.
H. A. McDonald Creamery Co., Detroit, Mich.
Rosebud Creamery Co., Detroit, Mich.
Michigan State College Dairy, East Lansing, Mich.
Joppe's Dairy, Grand Rapids, Mich.
Rochester Dairy Co., Rochester, Minn.
Longview Farms, Lees Summit, Mo.
Pevely Dairy Co., St. Louis, Mo.
H. P. Hood & Sons, Inc., Boston, Mass.
The Gardner Creamery, Inc., Gardner, Mass.
F. B. Mallory, Inc., Springfield, Mass.
Alderney Dairy, Newark, N. J.
Producers Creamery (Berrian County Milk Producers), Benton Harbor, Mich.
Millside Farms, Inc., Riverside, N. J.
Raritan Valley Farms, Inc., Somerville, N. J.
Castanea Dairy Co., Trenton, N. J.
Durling Farms, Inc., White House, N. J.
W. M. Evans Dairy Co., Inc., Brooklyn, N. Y.
Ferndale Farms, Inc., Brooklyn, N. Y.
Bentley & Renchens, Dunkirk, N. Y.
The Borden Co., New York City.
Carrigan's Niagara Dairy Co., Niagara Falls, N. Y.
Borden's Farm Products Co., Inc., Oxford, N. Y.
W. D. F. Hayden Dairy Co., Dover, N. H.
Pine State Creamery Co., Raleigh, N. C.
Cedar Hill Farms, Newton, Ohio.
Producers Milk Co., Cleveland, Ohio.
Beatrice Creamery Co., Tulsa, Okla.
Pure White Dairy Co., Tulsa, Okla.
Quality Milk Products Co., Tulsa, Okla.
Western Creameries, Inc., Tulsa, Okla.
Wordin & Sons, (Fulton Park Dairy), Hillsdale, Oreg.
Portland Milk Producers Association, Portland, Oreg.
Riverview-Damascus Milk Co., Portland, Oreg.
Lehigh Valley Cooperative Farmers, Allentown, Pa.
Menzie Dairy Co., Pittsburgh, Pa.
Philadelphia Dairy Products Co., Inc., Philadelphia, Pa.
Iseneker's Dairy, Inc., Rome, N. Y.
Biltmore Dairy Farms, Inc., Asheville, N. C.
Clover Leaf Harris Dairy, Salt Lake City, Utah.
Rosedale Dairy Co., Inc., Norfolk, Va.
Richmond Dairy Co., Richmond, Va.
Clover Creamery Co., Inc., Roanoke, Va.
Kitsap Dairymen's Association, Bremerton, Wash.
A. Kristoferson, Inc., Seattle, Wash.
Medosweet Dairies, Inc., Tacoma, Wash.
Blossom Dairy Co., Charleston, W. Va.
Valley Bell Dairy Co., Charleston, W. Va.
Modern Dairy Co., LaCrosse, Wis.
Fischl Ice Cream & Dairy Co., Manitowoc, Wis.
Golden Guernsey Cooperative, Milwaukee, Wis.
Clover Leaf Dairy Co., Racine, Wis.
Abbott's Dairies, Philadelphia, Pa.
Wm. Colteryahn & Sons Co., Pittsburgh, Pa.
West End Dairy, Charleston, S. C.
Harris Cream Top Milk Co., Houston, Tex.
Sheboygan Dairy Products Co., Sheboygan, Wis.
Kleinheinz Dairy Co., Wausau, Wis.
Stueber Dairy Co., Wausau, Wis.

All of the fluid milk companies listed above are licensed to produce irradiated vitamin D milk under United States Letters Patent No. 1,680,818.

Digitized by Google

Fluid milk companies licensed to produce metabolized vitamin D milk through the feeding of irradiated yeast to dairy cattle

Best Dairies, Mobile, Ala.
Fairview Dairy, Tucson, Ariz.
Arden Farms, Inc., El Monte, Calif.
Roger Jessup Certified Farm, Glendale, Calif.
Adohr Milk Farms, Los Angeles, Calif.
Arden Farms, Inc., San Diego, Calif.
Excelsior Creamery, Ltd., Santa Ana, Calif.
Sinton Dairy Co., Colorado Springs, Colo.
Wood Ford Farm, Avon, Conn.
Hillcrest Farm, Bridgeport, Conn.
Osborndale Farm, Derby, Conn.
Preston J. Davenport, Litchfield, Conn.
Cold Spring Farm, Milford, Conn.
Ridgewood Farm Dairy, Inc., New Haven, Conn.
Knudsen Bros., North Haven, Conn.
West Haven Creamery, Inc., West Haven, Conn.
Brookwood Farm, Greenville, Del.
Forman's Sanitary Dairy, Inc., Fort Lauderdale, Fla.
Farway Dairy, Inc., Hollywood, Fla.
Florida Milk Co., Inc., St. Petersburg, Fla.
Hood's Dairy, St. Petersburg, Fla.
Poinsettia Dairy Products, Inc., Tampa, Fla.
Tamps Stock Farms Dairy, Tampa, Fla.
Georgia Carolina Dairies, Augusta, Ga.
Haskell's Dairies, Augusta, Ga.
Brooks Dairy "The Elms," Burlington, Iowa.
Model Dairy Farms, Davenport, Iowa.
Blue Grass Farm Dairy, Fort Madison, Iowa.
Acme Holstein Dairy, Junction City, Kans.
Bartlett Farm, Wichita, Kans.
Springdale Farms, Anchorage, Ky.
Oakhurst Dairy, Portland, Maine.
Prsumpscot Farm, Westbrook, Maine.
Martin Showalter, Hagerstown, Md.
Dutchland Farms, Inc., Brockton, Mass.
H. P. Hood & Sons, Inc., Charlestown, Mass.
A. R. Parker Co., East Bridgewater, Mass.
Waveney Farm, Framingham, Mass.
Phelps Farm, Hadley, Mass.
Cloverleaf Dairy, Haverhill, Mass.
Wason-McDonald Co., Haverhill, Mass.
Weiler-Sterling Farms Co., Jamaica Plain, Mass.
High Lawn Farm, Lenox, Mass.
Frates Dairy Co., New Bradford, Mass.
Cloverluck Farm, Pepperell, Mass.
Nook Farm Corporation, Plymouth, Mass.
Twin Maple Farm, Saxonville, Mass.
Beattie's Dairy, South Hadley Falls, Mass.
Alta Crest Farms, Inc., Spencer, Mass.
Socquet's Hillside Farm, Turners Falls, Mass.
Eldroot Farm, Inc., Uxbridge, Mass.
Quon-Quont Stock Farm, Whately, Mass.
Hillcrest Dairy, Inc., Worcester, Mass.
Wawonissa Farm, Worcester, Mass.
Ira Wilson & Sons Dairy Co., Detroit, Mich.
Van Hoosen Farm, Rochester, Mich.
Romulus Farm Dairy, Romulus, Mich.
Bella Vista Farms, Ypsilanti, Mich.
Springhill Dairy, Duluth, Minn.
Adams Dairy Farm, Blue Springs, Mo.
Ellswood Guernsey Farm, Independence, Mo.
County Club Dairy Co., Kansas City, Mo.
Longview Farm, Lees Summit, Mo.

Digitized by Google

Fluid milk companies licensed to produce metabolized vitamin D milk through the feeding of irradiated yeast to dairy cattle—Continued

Concord Dairy, Inc., Concord, N. H.
W. T. Boyd & Son, Nashua, N. H.
Charles P. Hayward, Nashua, N. H.
Hampshire Hills Farms Co., Wilton, N. H.
Holly Ravine Farm Dairies, Haddonfield, N. J.
The Noo Farm, Inc., Madison, N. J.
Walker Gordon Laboratories Co., Inc., Plainsboro, N. J.
Terwilleger & Wakefield, Inc., Ridgewood, N. J.
Raritan Valley Dairy Farms, Inc., Somerville, N. J.
Arden Farm Dairy Co., Arden, N. Y.
Auburn Guernsey Farms, Inc., Auburn, N. Y.
Carwytham Farm, Bridgehampton, N. Y.
Gates Homestead Farm, Chitenango, N. Y.
Crocker Farms, Cortland, N. Y.
Daisy Dairy, Inc., Glens Falls, N. Y.
W. R. Quinby Dairy, Hamburg, N. Y.
Willow Brook Guernsey Farm, Huntington, Long Island, N. Y.
Rockwell Springs Dairy, Nedrow, N. Y.
Sheffield Farms Co., Inc., New York, N. Y.
Holland Dairy Farms, Oriskany, N. Y.
J. L. Atwood (Atwood Orchards), Plattsburg, N. Y.
Branglebrink Farms, St. James, Long Island, N. Y.
Schiller Park Dairy, Syracuse, N. Y.
Edwin Schwenk, Schwenk Dairy, Southampton, Long Island, N. Y.
Mountrose Dairy Co., Akron, Ohio.
Waldell Dairy, Alliance, Ohio.
French-Bauer, Inc., Cincinnati, Ohio.
Opekasit Farms, Inc., Glendale, Ohio.
Henry Meyer & Sons, Lockland, Ohio.
Pine Hill Stock Farm, Sharonville, Ohio.
Foster & Gelwick, Bartlesville, Okla.
Oblander Guernsey Dairy, Enid, Okla.
Alpenrose Dairy, Portland, Oreg.
I. C. S. Certified Dairy, Dalton, Pa.
Greenwood Dairies, Hulmeville, Pa.
Louden Hill Farm, South Montrose, Pa.
Fairoaks Farm, Saylesville, R. I.
Jackson & Haines Dairy, Rapid City, S. Dak.
Crescent Creamery Co., Inc., Sioux Falls, S. Dak.
V. A. Smart Dairy, Beaumont, Tex.
Price's Dairy Co., El Paso, Tex.
The Phenix Dairy, Houston, Tex.
Phenix Holstein Baby Milk Dairy, Houston, Tex.
Shaw Hospital Dairy, Marlin, Tex.
Sunshine Ranch (Jim Maverick), San Antonio, Tex.
Lehrack-Ferguson Dairy Products Co., Wichita Falls, Tex.
Fillmore Farms, Inc., Bennington, Vt.
Cedardale Dairy, Rutland, Vt.
Bayville Farms, Lynnhaven, Va.
Birtcerd Certified Dairy, Norfolk, Va.
Pine Grove Dairy Farm, Portsmouth, Va.
Smith Bros. Dairy, Kent, Wash.
Meadow Lark Dairy (Capitol City Creamery), Olympia, Wash.
Sanitay Infant Dairy, Puyallup, Wash.
Middale Guernsey Dairy, Ridgefield, Wash.
Arden Farms Co., Seattle, Wash.
Carnation Co., Seattle, Wash.
Golden Arrow Farms, Inc., Seattle, Wash.
Dickey's Dairy, Huntington, W. Va.
Dougan Guernsey Farm Dairy, Inc., Beloit, Wis.
Corium Farms, Inc., Fond du Lac, Wis.
Luxerin Farm, Fond du Lac, Wis.

Digitized by Google

Fluid milk companies licensed to produce metabolized vitamin D milk through the feeding of irradiated yeast to dairy cattle—Continued

Ridgehurst Dairy, Fort Atkinson, Wis.
Upanatem Farm, Foxboro, Wis.
Brook Hill Farm, Inc., Genesee Depot, Wis.
Arbuthnot Dairy, Janesville, Wis.
Bowman Dairy, Madison, Wis.
Kennedy, Drs. T. F. and G., Madison, Wis.
Sunny Croft Dairy, Mr. Theron Ridge, Monroe, Wis.
Meadow Springs Farm, Peebles, Wis.
Wallner, Dr. A., Watertown, Wis.
Keystone Farms, Waukesha, Wis.
Wern Farms, Waukesha, Wis.

All of the fluid milk companies listed above are licensed to produce metabolized vitamin D milk under United States Letters Patent 1,680,818.

EXHIBIT E

COPIES OF LICENSE AGREEMENTS [1]

This Agreement made this First day of November, 1938, between the Wisconsin Alumni Research Foundation, a Wisconsin corporation not for private profit (hereinafter called "Licensor") and Pet Milk Company, a corporation of the State of Delaware, having its principal office and place of business at 1401 Arcade Building, St. Louis, Missouri (hereinafter called "Licensee")

WITNESSETH:

WHEREAS, the parties hereto entered into a certain license agreement under date of November 1, 1933, in respect to the following United States Letters Patents owned by the Licensor:

No. 1,680,818, issued August 14, 1928, upon the application of Harry Steenblock,

No. 1,871,135, issued August 9, 1932, upon the application of Harry Steenblock,

No. 1,871,136, issued August 9, 1932, upon the application of Harry Steenblock,

No. 2,057,399, issued October 13, 1936, upon the application of Harry Steenbock, and

WHEREAS, pursuant to said license agreement the Licensee was also granted a license under United States Letters Patent No. 1,817,936, issued August 11, 1931, upon the application of George Supplee, under which said patent the Licensor had authority to grant licenses; and,

WHEREAS, upon the date of said license agreement, licenses of identical terms were granted to the following companies: The Borden Company, Carnation Company, Indiana Condensed Milk Company, Nestle's Milk Products, Inc., and Pet Milk Company, hereinafter sometimes referred to as the Licensees and

WHEREAS, said license agreement of November 1, 1933, was modified and interpreted in certain respects by letter agreements between the parties hereto, dated February 28, 1934, and August 9, 1934, at which times said license agreements with the other Licensees were similarly modified and interpreted; and

WHEREAS the licenses granted by each of said license agreements extended for a period of five years from November 1, 1933, and at the expiration thereof each licensee had an option to continue its said license upon certain terms outlined in Section X of each of said license agreements; and

WHEREAS, the Licensee desires to exercise said option to renew its license under condition that said license agreement dated November 1, 1933, as modified by said letter agreements, be further modified in certain respects, which further modifications have been agreed to by the Licensor, and it is the desire of the Licensor and the Licensee to supersede said prior agreement and amending agreements by this new agreement which will incorporate herein all of said modifications and bring same down to date.

NOW, THEREFORE, for and in consideration of the premises and of the conditions and promises hereinafter contained, it is agreed by and between the parties hereto, as follows

[1] In the copies of license agreements hereinafter set forth royalty rates and percentages, dollar figures, prices, and certain other amounts and figures have been omitted.

Digitized by Google

I

The Licensor grants to the Licensee a license under United States Letters Patent No. 1,680,818, No. 1,871,136, No. 1,871,135, No. 1,817,936, No. 2,057,399, and any and all patents or patent applications relating to the irradiation of fluids or food products as may now or hereafter be filed by, assigned to, owned by, acquired by, or controlled by the Licensor to activate the Licensee's unsweetened evaporated milk and to sell the same.

The word "activate" as used herein means the enhancement of Vitamin D potency of the Licensee's unsweetened evaporated milk by the direct treatment of such milk by ultra violet rays either before, during, or after the evaporation step.

II

The rights granted to the Licensee under this license shall extend throughout the world, save for Great Britain (including North Ireland and the Isle of Man), and Germany.

The rights granted to the Licensee under this license and to the other Licensees under their respective licenses shall be exclusive to the Licensees in the United States, its territories and possessions, and nonexclusive throughout the remainder of the licensed territory, the Licensor hereby agreeing that so long as this agreement or any renewal thereof is in full force and effect that it shall not, except as hereinafter provided, license any person, company, or association whatsoever to irradiate unsweetened evaporated milk or to sell irradiated unsweetened evaporated milk in the exclusive territory covered hereby, except the Licensees, all of which companies were the original Licensees and the pioneers of irradiated evaporated milk.

III

The duration of this license unless otherwise terminated in accordance with the provisions of this contract, shall be for the period commencing November 1, 1938, and expiring August 14, 1945.

IV

For the rights secured under this license, the Licensee shall pay to the Licensor during the period specified in Section III hereof, royalties upon all unsweetened evaporated milk activated and sold under this license by it and by subsidiary and affiliated companies operating under Section XXXI hereof, in accordance with the following schedule:

cents per case on the first cases of activated evaporated milk sold hereunder, during each contract year.

cents per case on the next cases of activated evaporated milk sold hereunder, during each contract year.

cent per case on all activated evaporated milk sold hereunder in excess of cases, during each contract year.

The Licensee shall within thirty (30) days after the first of February, May, August, and November of each year during the existence of this license, commencing with February 1, 1939, remit to the Licensor the amount of royalties due the Licensor according to the above schedule for the immediately preceding three months' period.

It is specifically understood, however, that the Licensee shall not be required to pay royalty to the Licensor for its unsweetened evaporated milk activated under this license and sold in or sold for export to countries in which the Licensor does not now or hereafter own patents or possess licensing rights under patents corresponding to the United States Letters Patents specified in Section I hereof; or for activated unsweetened evaporated milk picked up and destroyed because of spoilage or any other reason making it unmarketable; or for activated unsweetened evaporated milk purchased from one of the other Licensees and upon which royalties have already been paid.

"Contract year" as used herein means each full twelve (12) months' period during the life of this agreement and any renewal thereof, commencing with November 1, 1938. In the event this license or any renewal thereof is terminated by expiration or by mutual consent prior to October 31 of any contract year, each of the basic amounts provided for in the schedule above shall be reduced in the same proportion that the number of months or portions of months which the license has then run since the expiration of the preceding contract year bears to twelve (12) and royalties for said portion of a contract year (paid or unpaid) shall be adjusted accordingly.

Digitized by Google

The Licensee shall at the time it makes the last royalty payment under this license or any renewal thereof, either add to or subtract from, as the case may be, the number of cases on which it is to pay royalties the number of cases comprising the difference between the inventory of activated unsweetened evaporated milk which the Licensee has on hand at the date of expiration or cancellation of this agreement or renewal thereof, as the case may be, and the inventory of activated unsweetened evaporated milk which the Licensee has on hand on October 31, 1938; it being the intention of the parties that if said October 31, 1938, inventory is less than said inventory as of the date of termination, the Licensee shall pay to the Licensor royalties on said difference; and if said October 31, 1938, inventory is greater than said inventory as of date of termination, the Licensee shall be credited with royalties on said difference.

A case of unsweetened evaporated milk as used in this license means a case containing forty-eight tall cans of net weight 14½ ounces each (provided, however, that in the event the industry should in general practice increase the contents of the can to sixteen (16) ounces, then forty-eight (48) such cans shall constitute a case), and all milk packed in cans smaller or larger than the current tall size (or sixteen- (16) ounce size, in the event of such change) shall be adjusted as to count of cases to the net milk content of such tall size can as may be currently in general use.

The Licensor guarantees that the terms and conditions provided for herein will always be as favorable as those granted to any licensee and that the royalties provided for in this section and the minimum guarantee provided for in Section V are as low as those paid or payable by any licensee now or hereafter licensed under any or all of the patents and patent applications referred to herein to activate unsweetened evaporated milk by the direct treatment of said milk with ultra violet rays, except that it is understood that the other Licensees now have different royalty schedules (the number of cases to be included in the _____ cent bracket and the _____ cent bracket mentioned above), and the Licensor agrees that it will not further modify the royalty schedule of any Licensee so as to render it any more favorable than it is today without modifying Licensee's royalty schedule proportionately and that it will give to the Licensee the benefit of any terms and conditions more favorable or any reduction in the rate of royalties and in equal terms to those which may have been given or may hereafter be given to any other licensee in the unsweetened evaporated milk field under any or all of said patents, and patent applications, it being the intent that the terms and conditions of this agreement and the royalties and the basic figures used in calculating the royalties and the minimum guarantee paid or payable by Licensee during the term of this license and any renewal thereof shall, except as hereinabove provided, always be as favorable and as low as Licensor's most favored licensee in the evaporated milk field, provided, however, that this provision shall not apply in the case of licenses granted pursuant to the second paragraph of Section XI hereof.

V

If in any contract year during the life hereof royalties paid by the Licensee to the Licensor are less than an amount equivalent to the sum based upon the schedule of royalties set forth in Section IV, hereof, applied to the total quantity of unsweetened evaporated milk sold during said contract year by the Licensee and by its subsidiary and affiliated companies operating under Section XXI of this license agreement in the United States, in containers of sixteen ounces (16 oz.) or less under brands owned by the Licensee and by its said subsidiary and affiliated companies operating under Section XXI hereof, less the total quantity of said evaporated milk (a) picked up and destroyed because of spoilage or for any other reason which in the opinion of Licensee makes it unmarketable; (b) sold in the United States for export; (c) sold where the sale or distribution of activated unsweetened evaporated milk is prohibited by any law, ordinance, or governmental regulation; (d) sold to the United States government or any division or department thereof where the orders or bids of the buyer specify unactivated evaporated milk; and (e) purchased from one of the licensees and upon which royalties have already been paid, then and in such event the Licensee shall pay to the Licensor such additional payment for said contract year as will bring its total payment for said year up to said amount.

VI

It is the understanding of the parties that no increase in the price of unsweetened evaporated milk shall be made by the Licensee by reason of the Vitamin D imparted to such milk under this licensee agreement. It is expressly understood,

Digitized by Google

however, that nothing in this paragraph shall be construed as in any way limiting the Licensee's legal rights to establish prices on its unsweetened evaporated milk.

VII

The parties hereto are not presently aware of any reason why this license should not endure noncancellable for the life of United States Letters Patent No. 1,680,818—that is, until August 14th, 1945, and it is the agreement and intent of the parties that it shall so endure. However, unforeseen contingencies may arise under which it would be unfair to the Licensee to require it to continue this license and which would in fairness impel the Licensor to release the Licensee from its obligations hereunder. This could and doubtless would be done by mutual action should such occasion arise, but to express now the intention of the parties as nearly as may be, it is agreed that if contrary to all present knowledge it should be found that the activation of unsweetened evaporated milk by ultra-violet rays under this license is substantially harmful to the user of such milk, or to the milk itself, the Licensee shall have the right to cancel this license.

Before the Licensee shall exercise such right of cancellation, the Licensee shall consult with the Licensor in respect thereto and in the event that disputes arise between the Licensor and the Licensee as to whether or not such unforeseen contingencies justify the Licensee in cancelling this license, the parties agree to settle each such dispute by arbitration, as hereinafter provided, and to abide by the award of the majority of the arbitrators.

In the event that such arbitration is required, the Board of Arbitrators shall consist of three members, one of which shall be appointed by the Licensor, one of which shall be appointed by the Licensee and the third member of which shall be appointed by the two thus selected. Such arbitration proceedings shall be strictly private between the Licensor and the Licensee. The arbitrators shall prescribe the procedure to be followed by the parties in presenting the matter for their consideration and the decision of the majority of the arbitrators shall be binding upon both parties. Each party shall be responsible for the compensation of the arbitrator appointed by it and the parties shall share equally the compensation of the third arbitrator. The other expenses of arbitration shall be paid by either party or both as the arbitrators may direct.

In addition to the foregoing right of cancellation, the Licensee may cancel this license without cause two years after the date hereof, or at any time thereafter up to August 13th, 1945, by serving upon the Licensor 90 days' written notice of its election so to do, provided, however, that in the event of such cancellation the Licensee shall pay to the Licensor within thirty days from the effective date of such cancellation, in addition to such other sums as are required to be paid by the Licensee to the Licensor under this agreement, an amount equal to the difference between the royalties paid and/or due from the Licensee to the Licensor from the date hereof to such date of cancellation, and cents per case of evaporated milk upon which said royalties have been paid and/or are due. If this license is renewed, as provided for herein, the Licensee may cancel this agreement at any time after August 14th, 1945, without payment of any consideration by serving upon the Licensor 90 days' written notice of the election so to do.

In the event that Letters Patent No. 1,680,818 be adjudicated to be invalid by any Circuit Court of Appeals of the United States, the Licensees shall not be obligated to pay royalty on unsweetened evaporated milk activated and sold in the territory subject to the jurisdiction of such court or courts; provided, however, that if said patent is later adjudicated valid by the Supreme Court of the United States, royalties for such territories will again be payable from the date of decision of such Circuit Court of Appeals.

VIII

It is understood that the Licensees, individually or collectively, will continue a general advertising campaign in the United States markets where the Licensee's unsweetened evaporated milk is sold, for the purpose of keeping before the public the value of Vitamin D as incorporated into unsweetened evaporated milk.

IX

The Licensee shall not sell unsweetened evaporated milk activated under this license except in cans of a capacity of sixteen ounces or less. This limitation shall not apply to unsweetened evaporated milk sold under this license outside of the United States.

Digitized by Google

The Licensee agrees that it will not knowingly directly or indirectly sell its unsweetened evaporated milk activated under this license to others for resale under brands not owned by the Licensee or by subsidiary or affiliated companies operating under Section XXI hereof (except to others licensed by the Licensor to activate unsweetened evaporated milk for sale under their own brands), or as a source of Vitamin D for any other product when such product is intended to be sold or resold on a commercial basis. In case it comes to the attention of the Licensee by notice or otherwise that its activated evaporated milk is being so used and/or sold by others, the Licensee will take all reasonable steps to prevent a continuance of such use and/or resale.

X

At the expiration of this license on August 14, 1945, the Licensee shall have the option to continue this license for the remainder of the lives of the patents and patent applications referred to herein (except United States Letters Patent No. 1,680,818, which will have expired upon the expiration of this license), upon the same terms and conditions as provided for herein, except a lower royalty basis may be agreed upon between the parties hereto.

XI

The Licensor shall have the right to grant additional licenses for the activation of unsweetened evaporated milk upon the same terms and conditions as this license, but only upon securing the approval of the Licensee. It is understood, however, that the Licensor shall have the right without the consent or approval of, but after consultation with the Licensees, to grant one license upon like terms and conditions as this license except that the royalties to be paid and the calculation of the minimum guarantee shall be based on a flat rate of _____ cents per case, in the place of and to replace the license of each Licensee which for any reason expires, lapses, or is terminated during the life of any of said patents.

In the event that the Licensor should at any time during the life of this license be compelled by virtue of or pursuant to the laws of the United States of America, to grant additional licenses under the patents herein licensed, of a similar scope to this license (not referring, however, to licenses granted to the other Licensees, or to additional licenses granted pursuant to the first paragraph of this section of this license), then and in such event the Licensee shall be credited pro rata with the amount of royalties received by the Licensor from any such additional license or licenses in each contract year during the life hereof, based upon the royalties paid in such contract year by the Licensee in proportion to the total royalties paid in such contract year by the Licensees.

XII

The Licensee agrees that while the Vitamin D content of unsweetened evaporated milk manufactured and sold under this license shall be high enough to aid materially in the general prevention of rickets in children, said evaporated milk shall not be intended or sold as a cure for rickets. The Licensee agrees that the Licensor may declare for the Licensee the number of units of Vitamin D to be imparted to each unit of product, and in the event that later clinical evidence should suggest the desirability of readjustment of potency, the Licensee furthermore agrees to make an increase or decrease in potency as recommended by the Licensor, such increase or decrease to go into effect within such reasonable time as may be agreed upon by the Licensee and Licensor.

The Licensor agrees that the Licensee will not be required under any circumstances to increase or decrease the potency of its activated unsweetened evaporated milk in such a way as to conflict with the provisions of any pertinent statute, ordinance, law or governmental regulation which may now or hereafter be in force and pertain to the subject.

XIII

The Licensee shall not, without the approval of the Licensor, circulate any advertising material naming the Steenbock process, the Steenbock patent, the University of Wisconsin, the Licensor, or Dr. Steenbock. No extravagant or unwarranted advertising claims shall be made by the Licensee for the unsweetened evaporated milk activated under this agreement and specifically attributed to Vitamin D. The Licensee shall furnish the Licensor with copies of representative advertisements of the product in connection with which representations are made as to the Vitamin D content if requested by Licensor.

Digitized by Google

It is understood that for the purpose of selecting suitable advertising material in accordance with the spirit of this section, the parties will confer with one another and advertising counsel before any general advertising program relating to Vitamin D is adopted.

XIV

The Licensee shall keep at its principal office true and particular account of all unsweetened evaporated milk activated and sold under this license agreement. At the request of the Licensor, upon reasonable notice, such records shall be available for check and audit by the Licensor or a certified public accountant in its behalf. Such records shall be preserved for at least three years. The Licensor shall regard information obtained from such records as confidential.

XV

The Licensee shall endeavor in good faith to comply with all statutory provisions pertaining to the marking of patented articles.

XVI

The Licensor does hereby grant to the Licensee the right and option at any time during the life of this agreement or any renewal thereof to affix in a suitable manner upon the label of each and every can in which it sells evaporated milk activated by ultra violet rays the following seal or insignia:

{Wisconsin Alumni Research Foundation
Approved for Vitamin D upon
periodic tests}

provided, however, that in the event the Vitamin D potency of the Licensee's product, according to tests made by or for the Licensor, should fall below standards established by the Licensor hereunder, which standards shall not be in conflict with any law, ordinance, or governmental regulation, the Licensee agrees that upon ninety (90) days' prior written notice from the Licensor it will promptly discontinue the use of such seal and not resume its use until it has complied with said standards.

It is further understood that the right to the use of the foregoing seal shall be exclusive to the Licensees in the field of unsweetened evaporated milk.

Upon the expiration of this license or any renewal thereof, as the case may be it is agreed that the Licensee shall have the right and option to continue the use of the aforesaid seal for a further period of five (5) years in consideration for which the Licensee shall pay a royalty of _____ cent per case on its activated unsweetened evaporated milk sold during said period in cans upon the labels of which appear said seal, the calculation of said royalties and the payment thereof to be made in the same manner as provided in the last four paragraphs of Section IV hereof, provided, however, that the Licensee continues at all times to meet the requirements relating to the use of said seal as provided above.

It is further understood that this right shall be exclusive to the Licensees in the field of unsweetened evaporated milk, if the right and option is exercised by at least three (3) of the Licensees and so long as the seal is being used by at least three (3) of the Licensees on not less than _____ percent of each of their total sales of activated unsweetened evaporated milk.

In the event the Licensee exercises the aforesaid option, the Licensor agrees to continue periodic Vitamin D testing of the Licensee's activated unsweetened evaporated milk so long during said five (5) year period as the Licensee continues to make royalty payments as herein provided for.

XVII

The Licensor shall have the right at any time to inspect and test samples of the Licensee's activated unsweetened evaporated milk and to this end the Licensee agrees to furnish the Licensor upon reasonable notice, such quantity of the unsweetened evaporated milk activated under this license agreement packed ready for sale, as may be reasonably necessary for the Licensor to test the potency thereof.

XVIII

The Licensor shall have the right to prosecute suits for infringement of the Letters Patent by virtue of which the Licensee is operating, and the Licensees, together with all other licensees under said patents shall be liable for one-half of

Digitized by Google

the reasonable costs of litigation involving infringements of the United States patents referred to herein.

The Licensor shall have the right, and it shall be its duty, to apportion equitably such one-half of the expenses of litigation among other licensees bound by their contracts to bear a portion of such expenses, but the Licensee herein shall not in any event be liable for more than its pro rata portion of such expenses, based on royalties currently accruing. It is understood that damages received by the Licensor in any suit will be applied against the cost of such suit before division of expenses between the licensees and Licensor as herein provided.

The Licensee shall have the right, at its own expense, to assist and cooperate with the Licensor in the prosecution of such litigation.

XIX

If the royalties or any part thereof, shall for a period of thirty (30) days be in arrears, or in the case of default by the Licensee in performing any of the agreements herein contained, the Licensor shall have in addition to all other legal or equitable remedies it may have in regard to the enforcement of this contract, the right to revoke this license if Licensee has not cured such default within a period of sixty (60) days after receipt of written notice setting forth said default or defaults.

If the default is in the payment of royalties, the Licensee shall, in addition to making payments of the royalties in arrears, pay interest at the rate of — per centum per annum upon said royalties from the due date thereof.

XX

The Licensor agrees that in all licenses granted by it for the activation of fluid milk by the use of irradiated ergosterol or by direct application of ultraviolet rays, it will incorporate a provision preventing the use of or sale of such activated milk by such licensees for the manufacture of activated unsweetened evaporated milk.

XXI

The Licensee shall have no right to assign this license without the approval of the Licensor. The benefits of this license may, however, be extended to—

(a) Subsidiary companies, 75% of whose stocks are owned by the Licensee, or by such a subsidiary of the Licensee.

(b) Companies, 75% of whose stock is owned by parent company referred to in (1).

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*
ATTEST: (Signed) L. M. HANKS.

PET MILK COMPANY,
By (Signed) JOHN A. LATZER, *President.*
ATTEST: (Signed) R. W. BALLMAN,
Asst. Secretary.

THIS SUPPLEMENTAL AGREEMENT made this Twenty-second day of May 1939, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for private profit (hereinafter called the "Licensor"), and PET MILK COMPANY, a corporation of the State of Delaware, having its principal office and place of business at 1401 Arcade Building, St. Louis, Missouri, (hereinafter called the "Licensee"),

WITNESSETH:

WHEREAS, the parties hereto entered into a certain license agreement under date of November 1, 1938, in respect to certain United States Letters Patents owned or controlled by the Licensor, which said agreement superseded a prior agreement between the parties hereto dated November 1, 1933; and

WHEREAS similar licenses were granted by the Licensor under date of November 1, 1938, to the following companies: The Borden Company, Indiana Condensed Milk Company, Nestle's Milk Products, Inc., and Carnation Company.

WHEREAS, said license agreement of November 1, 1938, embodied certain provisions respecting the right of the Licensee thereunder to use a certain seal or insignia adopted by the Licensor, both during the lives of the patents therein licensed and for a designated period after the expiration of said patents; and

Digitized by Google

WHEREAS, it is the desire of the parties hereto to modify in certain respects the provision of said license agreement of November 1, 1938, dealing with the use of said seal or insignia.

NOW, THEREFORE, for and in consideration of the promises and of the conditions and promises hereinafter contained, it is agreed by and between the parties hereto as follows:

I

That Section XVI of said license agreement of November 1, 1938, between the parties hereto is hereby amended to read as follows:

The Licensor does hereby grant to Licensee and all subsidiary and affiliated companies of Licensee operating under Section XXI hereof the right and option at any time during the life of this agreement or any renewal thereof without the payment of any fee or royalty to affix in a suitable manner upon the label of each and every can which it sells of evaporated milk activated by ultraviolet rays the following seal or insignia:

{Wisconsin Alumni Research Foundation Approved for Vitamin D upon periodic tests}

provided, however, that in the event the Vitamin D potency of the Licensee's product, according to tests made by or for the Licensor, should fall below standards established by the Licensor hereunder (which standards shall not be in conflict with any law, ordinance, or governmental regulation), the Licensee agrees that upon ninety (90) days' prior written notice from the Licensor it will promptly discontinue the use of such seal and not resume its use until it has complied with said standards.

It is further understood that the right to the use of the foregoing seal shall be exclusive to the Licensees and all subsidiary and affiliated companies of Licensees operating under Section XXI hereof in the field of unsweetened evaporated milk.

Upon the expiration date of this agreement and license or any renewal thereof, as the case mey be, it is agreed that the Licensee and all subsidiary and affiliated companies of Licensee operating under Section XXI hereof shall have the right and privilege if and when it complies with the Vitamin D potency requirements as provided for above, to use the aforesaid seal at any time and for such period or periods of time as it or any of them shall elect during the ten (10) year period immediately following such expiration date, and in consideration of such right and use the Licensee shall pay or cause to be paid to Licensor an amount equal to _____ cent per case on all unsweetened evaporated milk sold in the United States and Canada by it and by its subsidiary and affiliated companies operating under Section XXI hereof in cans upon the labels of which appears said seal up to but not to exceed in any "contract year" _____ Dollars.

The Licensee shall within thirty (30) days after the first three (3) months of the "contract year" and each three (3) months thereafter remit or cause to be remitted to the Licensor the amount if any then due to the Licensor on the basis of _____ cent per case as above provided for the immediately preceding three (3) months' period up to and until the payments have amounted to the maximum amount to be paid in any one "contract year," to-wit, _____ dollars.

"Contract year" as used herein means each full twelve (12)months' period during the ten (10) year life of the right granted hereunder commencing with the expiration date of this agreement and license or any renewal thereof as the case may be.

It is specifically understood, however, that in calculating the amount to be paid hereunder the unsweetened evaporated milk bearing said seal sold in the United States and Canada for export to countries other than the United States and Canada shall not be considered as milk sold and further that the Licensee shall be credited with an amount equal to _____ cent per case as defined on all evaporated milk bearing said seal picked up and destroyed because of the unmarketability of same.

It is further understood that this right shall be exclusive to the Licensees in the field of unsweetened evaporated milk, if the right and option is exercised by at least three (3) of the Licensees and so long as the seal is being used by at least (3) of the Licensees on not less than _____ percent of each of their total sales of activated unsweetened evaporated milk.

In the event the Licensee exercises the aforesaid right and privilege, the Licensor agrees to make periodic Vitamin D testing of the Licensee's activated unsweetened

Digitized by Google

evaporated milk during the period or periods within said ten (10) years that the Licensee is using said seal and is making the payments therefor as herein provided for.

Except as herein expressly provided, all of the terms, conditions, and provisions of said license agreement of November 1, 1938, between the parties hereto are and shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have by their respective duly authorized officers set their hands hereto and caused their respective corporate seals to be affixed the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*

Attest:

[SEAL] (Signed) L. M. HANKS,
Secretary.

PET MILK COMPANY,
By (Signed) JOHN A. LATZER, *President.*

Attest:

[SEAL] (Signed) R. W. BALLMANN,
Asst. Secretary.

Plaintiff has issued licenses identical in terms to that of the Pet Milk Company to the following companies:

The Borden Company.
Carnation Company.
Indiana Condensed Milk Company.
Nestle's Milk Products, Inc.

The foregoing four license agreements have been modified in the same manner as the Pet Milk Company license has been modified.

THIS AGREEMENT, Made this 21st day of March 1929, between Wisconsin Alumni Research Foundation, a Wisconsin corporation not for pecuniary profit (hereinafter called Licensor), Harry Steenbock, of Madison, Wisconsin (hereinafter called Patentee), and Mead Johnson & Co., a corporation of the State of Indiana, with its principal place of business at Evansville, Indiana (hereinafter called Licensee):

Witnesseth, That,

Whereas, the Licensor is a corporation organized under Chapter 180, Wisconsin Statutes, to promote, encourage and aid scientific investigation and research at the Universtiy of Wisconsin by the faculty, staff, alumni, and students thereof, and those associated therewith, and to provide or assist in providing means and machinery by which their scientific discoveries, inventions, and processes may be developed and applied and patented, and the public, commercial and humanitarian uses thereof determined and utilized, and by which such utilization or disposition may be made of such discoveries, inventions or processes and patent rights or interest therein, as may tend to stimulate, promote and provide funds for further scientific investigation and research within said University or departments thereof; and,

Whereas, the Licensor is the owner of United States Letters Patent No. 1,680,818, issued August 14, 1928, upon the application of Harry Steenbock, upon antirachitic products and process, and is also the owner of certain inventions upon which applications for patents have been filed in the Patent Office of the United States by said Harry Steenbock, relating to antirachitic foods and/or medicines, and/or methods for producing the same, including those inventions described in the following applications for United States Letters Patent:

Steenbock Serial No. 157429, filed Dec. 27, 1926;
Steenbock Serial No. 157430, filed Dec. 27, 1926;
Steenbock Serial No. 185922, filed April 22, 1927;
Steenbock Serial No. 185923, filed April 22, 1927;

and

Whereas, Mead, Johnson & Company, Winthrop Chemical Company, Abbott Laboratories, Parke-Davis & Company and E. R. Squibb & Sons, hereinafter sometimes called the Licensees of this group, have negotiated with the Licensor, and now desire to secure licenses for the irradiation or activation and sale of ergosterol (meaning hereafter not only ergosterol, but also its derivatives and other steols and other derivatives capable of being activated or irradiated, or

Digitized by Google

other activateable materials that may be discovered and found usable in the pharmaceutical and medical fields as herein contemplated), activated and/or irradiated by the means and methods disclosed in said patent and/or patent applications, said ergosterol to be produced and sold for use in human medicine only. It is understood that when the word "ergosterol" is used in this license, it means activated or irradiated ergosterol, and that this license has nothing to do with nonactivated or nonirradiated ergosterol; and,

Whereas, the said companies likewise desire to be licensed by the Licensor for the purpose of increasing antirachitic potency of cod liver oil as hereinafter set forth; and,

Whereas, it is the mutual desire of the Licensor, of the Patentee and of the companies above named, that the licenses shall to each of said companies be of identical terms, and that the product or products sold by each of said companies shall be of the same standard of potency as regards the antirachitic principle or vitamin D content, all to the end that standardized products will be available to the pharmacists and to the medical profession, It is agreed:

1. The Licensor grants to the Licensee a license to use the inventions described in said patent and/or said patent applications for: (*a*) The manufacture and sale of activated or irradiated ergosterol for use in medicines and for pharmaceutical purposes only as above defined; (*b*) the right to use activated or irradiated ergosterol for the purpose of preparing solutions of vitamin D in medicinally neutral oils, so as to give them rickets-preventing potencies five (5) times as great as standard cod liver oil and/or one hundred (100) times as great a potency as standard cod liver oil; (*c*) the right to use activated or irradiated ergosterol for the purpose of preparing solutions of vitamin D with cod liver oil so as to give such cod liver oils rickets-preventing potencies equal to a standard cod liver oil and/or five (5) times as great as a standard cod liver oil; and (*d*) the right to sell the oils so treated.

The treated cod liver oils shall be initially of such vitamin D standard as defined in the appendix hereto, which standard may by mutual agreement of Licensees of this group be changed from time to time; said Licensees may also by mutual agreement change the factor five (5) and the factor one hundred (100) to some other number or numbers to define the vitamin D potency in relation to standard cod liver oil as expressed in rat units and described in the appendix hereto.

2. The parties hereto recognizing the necessity of maintaining a standard of potency, uniformity and ease of administration of activated ergosterol so that the use of activated ergosterol may be permanently established in good repute in human medicines, agree that for the present the manufacture and sale of activated ergosterol shall be limited to preparations in oil. It is recognized that the mode of compounding and administration may vary and may include such convenient forms as liquids, emulsions, elixirs, tablets, and troches, compounded of activated or irradiated ergosterol and some medicinally inert medium. It is also recognized that it may be compounded and administered in some medicinally potent medium other than cod liver oil thus producing a compound medicine possessing other primary virtues than those attributed to vitamins A and D. But before the Licensee may change to media other than oils as expressed in this article, it shall obtain the written consent of the Licensor to so do.

3. The Licensor and/or Patentee shall, without charge, give to the Licensee, its agents and servants, such assistance, data, explanation, and information bearing upon the processes as shall enable licensee to work the processes to the best advantage to the full extent known to the Patentee and/or Licensor. The Licensor and/or Patentee shall forthwith communicate to the Licensee, its agents and servants, any improvement and invention which they or either of them may make or acquire with respect to the processes, whether such improvement or further invention shall be patented or not, and will fully disclose to the Licensee the nature and manner of performing the same, and will apply for Letters Patent therefor if so requested by the Licensee and will permit the Licensee to use the same and to manufacture and sell under the same without payment of any further or additional royalty as specified hereinafter.

4. The said license for the manufacture and sale of activated or irradiated ergosterol for use in human medicine and/or for human pharmaceutical purposes only, in the form of an oil solution one hundred (100) times the potency of standard cod-liver oil and the use of activated or irradiated ergosterol for the purpose of producing cod-liver oil of standard potency, and the use of activated or irradiated ergosterol for the purpose of producing in a medicinally neutral oil and/or in cod-liver oil a preparation or preparations of five (5) times the vitamin D potency of standard cod-liver oil as defined in rat units, extends throughout the world

Digitized by Google

save for Great Britain (including North Ireland and the Isle of Man) and Germany. As to the rights granted by this license, except as to the enrichment of deficient cod-liver oil up to standard in vitamin D content, this Licensee, together with the other named Licensees of this group, shall have exclusive rights in the United States and the territory subject to the jurisdiction thereof, and in the remainder of the permitted territory such rights shall be nonexclusive.

5. The duration of this license shall be for that length of time measured by the United States Letters Patent No. 1,680,818, issued August 14, 1928, and hereinbefore referred to.

6. Upon the execution of this agreement, the Licensee shall pay to the Licensor, as earnest money, the sum of _____ Dollars, which shall be applied to the credit of the Licensee in payment of the royalties hereinafter specified as they become due.

7. The Licensee agrees to pay to the Licensor within thirty (30) days from the end of each three (3) calendar months' period while this license agreement is in effect, and beginning after sales hereunder have been authorized as provided in paragraph 21 hereof, a sum equivalent to ____ percent of the net sales of the preparation in neutral oil carrying one hundred (100) times the potency of standard cod-liver oil sold during the preceding three (3) calendar months, and to pay to the Licensor a sum equivalent to ____ percent of the net sales of cod-liver oil or neutral oil to which activated or irradiated ergosterol has been added in lesser concentration as sold during the preceding three (3) calendar months. For preparations of irradiated or activated ergosterol made and sold in media other than oils either as a simple source of vitamin D or in compound medicines, the Licensee agrees to pay the Licensor ____ percent of the net sales of such product when the antirachitic potency of the product gram for gram is less than five (5) times or equal to five (5) times the potency of standard cod liver oil, but if the antirachitic potency of such product is greater than five (5) times the potency of standard cod-liver oil, the Licensee agrees to pay ____percent of the net sales of such product. The Licensee guarantees that the sum paid for each of the first and second years after sales are authorized shall not be less than _____ dollars, and that the sum paid for the third year after sales are authorized, shall not be less than _____ dollars, and for each and every year thereafter during the life of this license shall not be less than _____ dollars. The Licensee agrees to pay to the Licensor on the termination of this license by the lapse of time or otherwise ____ percent of the net sales price (estimated upon the previous year's business) of the activated or irradiated ergosterol for medicinal and pharmaceutical purposes manufactured under this license, but not then sold, and ____ percent of the net sales price similarly estimated on cod liver-oil or neutral oil to which has been added activated or irradiated ergosterol but which cod-liver oil or neutral oil has not then been sold, said last mentioned sums to be paid within six months from the date of termination of this license.

The term "net sales," as used in this agreement, means the listed selling price, minus discounts to the trade, and makes allowances for returned goods.

8. The Licensee shall keep at its principal office or offices, true and particular account of all matters connected with the manufacture and sale of activated or irradiated ergosterol for medicinal and pharmaceutical purposes, and like account of all matters connected with the treatment and sale of cod liver oil and/or neutral oil with activated or irradiated ergosterol, and shall furnish to the Licensor, within the times limited in the preceding paragraph, a true and correct statement of the quantity of the products sold. At the request of the Licensor, upon reasonable notice, such records and accounts shall be open to inspection and audit by the Licensor or its agents. The records and accounts of the Licensee shall be preserved for at least two (2) years.

9. No advertising shall contain extravagant or unwarranted statements. The Licensee shall not in its advertising, without the approval of the Licensor, circulate any advertising material relating to the Steenbock process, the Steenbock patents, the University of Wisconsin, or the Licensor; and such advertising material shall first be submitted to the Licensor for its approval. The Licensee shall advertise the preparation in neutral oil and/or in other medicinally inert media carrying activated or irradiated ergosterol in concentration greater than five (5) times the potency of standard cod liver oil only in those publications which primarily serve the drug trade and/or the medical profession.

10. The Licensee shall properly comply with all statutory requirements pertaining to the marking of patented articles.

11. The Licensor shall have the right at any time to inspect and test samples of the Licensee's irradiated or activated ergosterol and the Licensee's product or

Digitized by Google

products, and to this end the Licensee agrees to furnish to the Licensor upon reasonable notice, such quantity of its activated or irradiated ergosterol and of its product or products as packed or bottled ready for sale, as may be necessary for the Licensor to test the potency thereof. The purpose of this provision is that the Licensor may determine for its benefit and for the benefit of the other Licensees named and contemplated herein, that the product or products of the Licensee comply with the standard herein set forth.

12. As to the territory in which the Licensees have exclusive rights, the Licensor shall have the right to establish fair and reasonable minimum net prices for the products covered by this license except for deficient cod liver oil brought up to standard by the addition of irradiated or activated ergosterol. And the Licensee shall observe and abide by the said prices so established. Such prices so established shall remain in effect indefinitely but may be changed by the Licensor not less than ninety (90) days after consultation with all the Licensees of this group. In accordance with the provisions of this paragraph 12, the Licensor establishes the following schedule of minimum prices:

(2) Five cubic centimeters neutral oil prepared to one hundred times the vitamin D potency of standard cod liver oil, $ ____ per dozen, with maximum discounts of __ % and __ % for cash to all classes of customers.

(b) Fifty cubic centimeters of the same material, $ ____ per dozen, with maximum discounts of __ % and __ % for cash to all classes of customers.

(c) Three ounce bottle of cod liver oil enriched to five times the vitamin D potency of standard cod liver oil, $____ per dozen, with maximum discounts of __% and __% for cash to all classes of customers.

(d) Sixteen ounce bottle of the same material, $____ per dozen, with maximum discounts of __% and __% for cash to all classes of customers.

(e) No free goods of any kind or any other inducements are to be offered, the effect or tendency of which would be to lower the minimum prices above established.

This Licensee and each of the Licensees agrees not to furnish free the products covered in this license except for clinical and research purposes only; and at the end of each month the Licensor is to be furnished a list of the names and addresses of those to whom such products are given during that month, together with the amounts of each product furnished.

13. As to the territory in which the Licensees have exclusive rights until and unless changed by the mutual understanding of a majority of the Licensees of this group the Licensee agrees that its preparation or preparations of activated or irradiated ergosterol in neutral oil giving such a preparation a potency of one hundred (100) times the potency of standard cod liver oil shall be marketed in containers five (5) cubic centimeters in capacity and/or in containers fifty (50) cubic centimeters in capacity; and that its preparations having a vitamin D potency of five (5) times that of standard cod liver oil shall be marketed in containers of three and/or sixteen fluid ounces.

14. The Licensor and/or Patentee agree that they will grant to no one in the exclusive territory covered by this license, the right to use said inventions for the purpose of preparing cod liver oil of a higher degree of potency than standard cod liver oil, insofar as such cod liver oil is for human consumption.

15. In case of infringement in the fields covered by this License of any of the Letters Patent under which by virtue of this license the Licensee is operating, in such case the Licensees of this group may jointly take the necessary proceedings effectually to protect the said patent or patents, and to that end may use the name of the Licensor. If the said Licensees shall take such proceedings, the entire reasonable cost thereof shall be equally divided between the Licensor, on the one hand, and the said Licensees of this group, on the other hand. In such case the Licensees shall advance all the costs of litigation and shall take one-half of the previous year's expense from the succeeding year or years' royalty. If all the Licensees of this group shall elect not to take such proceedings, then the said Licensees shall notify the Licensor, and the Licensor, at its option, may take such proceedings at its own expense. In the former case, if any profits, damages, or royalties are collected in a suit brought by said Licensees, the amount thereof, less the cost of litigation, shall be divided equally between the Licensor and the Licensees. In the event that two of the several Licensees of this group shall wish to sue an infringer, in such case said Licensees shall notify the Licensor, and if the Licensor is of the opinion that such suit should be brought, it shall notify the remaining Licensees, and in such event the said Licensees of this group and the Licensor shall bear equally all the costs of such suit, and if profits, damages, or royalties are collected in such suit, they shall be divided as above set forth.

Digitized by Google

However, in any initial suit which shall be begun to establish the validity of the United States Letters Patent No. 1,680,818, in such cases the Licensor shall bear only one-third (⅓) of the expense thereof to be deducted by all of the Licensees hereinafter mentioned in their respective proportions, as herein set forth from the succeeding year or years' royalty accruing from each to the Licensor, and all of the United States Licensees shall in respect to the other two-thirds (⅔) of said expense each bear its proportionate part, the portions of said expense to be determined by a fraction whose numerator shall be the royalty paid during the previous year by each Licensee, and whose denominator shall be the total royalties paid to the Licensor by all the Licensees under the United States Letters Patent No. 1,680,818. In the event that there shall be no previous year's royalties for use as a factor, as herein outlined, the royalty figures shall be the guaranteed minimum royalty under the contract of such license or licenses for the previous year, and in case there is no such previous year's minimum guaranty, then the figure to be taken is the minimum guaranty for the first year in which the same is provided.

From the time any suit shall be instituted, royalties in any reasonably sufficient amount shall be withheld and retained by the Licensee until the final determination of such suit, at which time any advances made or liabilities incurred by the Licensee, shall be chargeable against the royalties so withheld, and the balance, if any, shall be immediately paid over to the Licensor. The Licensor and/or Patentee agrees to furnish the Licensee with all evidence which either of them may have and which may be necessary for the prosecution of any such litigation, without charge to the Licensee. The Licensee shall, unless the Licensor otherwise agrees in writing, carry any suit to the court of last resort. Neither the Licensor nor Patentee shall be liable for the costs and expenses incurred by the Licensee in any suit, except to the extent that royalties shall be or become due to the Licensor.

16. If any royalties hereinbefore covenanted to be paid shall be in arrears and unpaid for a period of thirty (30) days after the same shall have become payable, or if the Licensee shall permit or allow to be permitted a breach of any of the covenants herein contained on its part to be performed and observed, and shall not remedy such breach within sixty (60) days after written notice is given to it by the Licensor requiring such remedy, or if the Licensee shall become insolvent or commit any act of bankruptcy, or if any order for the compulsory liquidation of the Licensee shall be made by any competent court, the Licensor shall be at liberty in any and every such case, by notice in writing to determine this license, and, thereupon the license hereby granted, and all rights of the Licensee hereunder, shall forthwith cease and terminate, but without prejudice to the remedy of the Licensor to sue for and recover any royalties then due, and without prejudice to the remedy of either party in respect of any breach of the covenants herein contained.

17. The Licensee shall not, during the existence of this license, dispute the Licensor's or the Patentee's patents, and the Licensees shall not assign this license, or any part of the same, without the written consent of the Licensor, the Patentee, and the Licensees under similar licenses, except that the Licensee without such consent may sell or assign this license in connection with the sale or assignment of substantially its entire business.

18. The Licensor and Patentee agree that the licenses granted to other Licensees in this group shall be of the same and identical terms as this license.

19. This license may be terminated at any time after three (3) years from the date sales are authorized hereunder by notice in writing addressed to the Licensor three (3) months before the expiration date named in said notice.

20. The name Winthrop Chemical Co., Inc., as used in this license shall be deemed to include those corporations associated or affiliated with Winthrop Chemical Co., Inc., or with which Winthrop Chemical Co., Inc., is associated or affiliated (except I. G. Farbenindustrie Aktiengesellschaft of Frankfort, Germany), or whose capital stock is directly or indirectly owned by Winthrop Chemical Co., Inc., or who directly or indirectly own the capital of Winthrop Chemical Co., Inc., that is, such corporation (except I. G. Farbenindustrie Aktiengesellschaft) shall constitute a unit.

21 The Licensee agrees that the product or products licensed to be made and sold under this license shall not be sold or offered for sale until each of the companies named herein is in receipt of a written notice sent simultaneously to each company by the Licensor and Patentee authorizing the sale and offering for sale the product or products beginning sixty (60) days from the date of said notices. This provision shall be construed to include prohibiting the sending or giving of

Digitized by Google

samples or the detailing of physicians, pediatricians, doctors, pathologists, and the like but not to include the giving of samples for experimental or clinical work or research, which is permitted.

22. With respect to products covered by this license, which have a greater vitamin D potency than five times that of standard cod liver oil, wherever the dosage shall appear upon the labels or in the literature, or advertisements, it shall conform to the dosage determined by the Licensor.

23. Wherever in this contract discretion is given the Licensor and Patentee, such discretion shall not be exercised arbitrarily, but reasonably and in cooperation with the Licensee companies.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*

ATTEST:

(Signed) L. M. HANKE,
Secretary.

MEAD JOHNSON AND COMPANY,
By (Signed) E. MEAD JOHNSON, Jr., *Vice President.*

ATTEST:

(Signed) L. D. JOHNSON.
(Signed) HARRY STEENBOCK,
Patentee.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill., January 24, 1936.

ABBOTT LABORATORIES,
MEAD JOHNSON & CO.,
PARKE, DAVIS & CO.,
E. R. SQUIBB & SONS,
WINTHROP CHEMICAL CO.

GENTLEMEN: Pursuant to action taken at the New York meeting between the pharmaceutical licensees and the foundation, under date of January 12, 1936, we are writing you this as a separate letter in regard to the matter of sharing litigation expenses, profits, and damages in infringement litigation on the Steenbock patents.

With respect to any litigation respecting the validity or infringement of the Steenbock patents now pending or hereafter to be brought, the Wisconsin Foundation shall pay one-half of the expenses of such litigation, and the pharmaceutical licensees, together with other licensees of the Wisconsin Foundation under the Steenbock patents who may be bound by their contracts to contribute, shall pay the other half of such expenses. It is understood that the portion of such expenses to be borne by the five pharmaceutical licensees shall be divided share and share alike, between them.

Any profits or damages collected in these proceedings shall be divided equally between the foundation on the one hand and the pharmaceutical licensees on the other hand, it being understood, however, that the foundation shall have to take into consideration the interests of its other licensees under the Steenbock patents who contribute to this litigation and request a share of the profits and damages, and, further, that the foundation reserves to itself the right, in the judgment of its counsel, to start a further suit or suits at its own expense for the recovery on its own behalf of lost royalties, if not included in the recovery of profits or damages above-mentioned.

The proposed Sperti process infringement suits will be conducted by the foundation through its counsel.

The above arrangement is to be substituted for and in lieu of the present provisions on this subject matter contained in section 15 of the license agreements under the Steenbock patents between the foundation and the pharmaceutical licensees, respectively.

Also, pursuant to request made at the meeting between the foundation and the pharmaceutical licensees of January 12, 1936, we are setting forth herein the names of other licensees of the foundation bound by their contracts to share in the expenses of the Sperti process litigation these are:

E. I. DuPont de Nemours Co., Wilmington, Del.
Wander Co., Chicago, Ill.
R. B. Davis Co, Hoboken, N. J.
Dry Milk Co., New York.
The Borden Co., New York.

Digitized by Google

Carnation Co., Milwaukee, Wis.
Pet Milk Co., St. Louis, Mo.
Nestle's Milk Products, Inc., New York.
Indiana Condensed Milk Co., Indianapolis, Ind.
Commander-Larabee Corporation, Minneapolis.
Ayerst, McKenna & Harrison (United States), Ltd., Rouse's Point, N. Y.

We shall appreciate it if you will kindly indicate your acceptance of the foregoing arrangement at the foot of this letter and return one executed copy thereof to us.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) R. L. RUSSELL, *Director.*

Accepted:

MEAD JOHNSON & Co.,
By (Signed) H. C. MCCUTCHEON, *Secretary.*

SUPPLEMENTAL AGREEMENT

This Supplemental Agreement made this 15th day of October 1936 between Wisconsin Alumni Research Foundation, a Wisconsin corporation, not for pecuniary profit (hereinafter called Licensor); Harry Steenbock, of Madison, Wisconsin (hereinafter called Patentee); and Mead Johnson & Company, a corporation of the State of Indiana, with its principal place of business at Evansville, Ind. (hereinafter called licensee);

WITNESSETH: Whereas the parties hereto entered into a certain license agreement under date of March 21, 1929, in respect of United States Letters Patent No. 1,680,818, issued August 14, 1928, upon the application of Harry Steeenbock, and certain applications for United States patents filed by Harry Steenbock; and

Whereas said license agreement, pursuant to the terms thereof, was identical in terms to licenses simultaneously granted to Parke, Davis & Co., E. R. Squibb & Sons, Winthrop Chemical Co. and Abbott Laboratories; and

Whereas it is the mutual desire of the parties hereto and of the other Licensees herein above mentioned to modify in certain respects this license agreement and in the same respects to modify each of said other license agreements so that all five of said licenses may remain identical in terms, it is agreed:

That the first sentence of the third paragraph commencing with the word "Whereas" of said license agreement of March 21, 1929, is hereby amended to read as follows:

"Whereas, Mead, Johnson & Company, Winthrop Chemical Company, Abbott Laboratories, Parke, Davis & Co. and E. R. Squibb & Sons, hereinafter sometimes called the Licensees of this group, have negotiated with the Licensor, and now desire to secure license for the irradiation or activation and sale of ergosterol (meaning hereafter, except where expressly otherwise limited, not only ergosterol, but also its derivatives and other sterols and other derivatives capable of being activated or irradiated, or other activatable materials that may be discovered and found usable in the pharmaceutical and medical fields as herein contemplated), activated and/or irradiated by the means and methods disclosed in said patent and/or patent applications, said ergosterol to be produced and sold for use in human medicine, and/or (as hereinafter limited) for administration to dogs, cats and foxes." [Handwritten:] Not pet mice? Or monkeys?

II

That section I of said license agreement of March 21, 1929, is hereby amended by adding thereto immediately following the end of the first paragraph thereof, the following paragraph:

"It is understood and agreed that the Licensee may sell activated or irradiated ergosterol (meaning for the purpose of the right granted in this sentence only, activated or irradiated ergosterol as such and not derivatives thereof or other sterols), in solutions of medicinally neutral oils, having rickets-preventing potencies of 10,000 U. S. P. S. 1934 Revised Vitamin D units per gram and/or such activated or irradiated ergosterol with halibut liver oil, such combined product having rickets-preventing potencies of 10,000 U. S. P. X. 1934 Revised Vitamin D units per gram, for administering the same directly and as such to dogs, cats and foxes."

Digitized by Google

III

That section 4 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"IV. The said license for the manufacture and sale of activated or irradiated ergosterol for use in human medicine and/or for human pharmaceutical purposes only, in the form of an oil solution containing a potency of 10,000 U. S. P. X. 1934 Revised Vitamin D units per gram and the use of activated or irradiated ergosterol for the purpose of producing cod liver oil of standard potency, and the use of activated or irradiated ergosterol for the purpose of producing in a medicinally neutral oil and/or in cod liver oil a preparation or preparations containing 400 U. S. P. X. 1934 Revised Vitamin D units per gram, and the said license for the manufacture and sale of activated or irradiated ergosterol (as hereinabove limited), and/or such activated or irradiated ergosterol with halibut liver oil, for administration to dogs, cats, and foxes only, extend throughout the world save for Great Britain (including North Ireland and the Isle of Man) and Germany. As to the rights granted by this license, except as to the enrichment of deficient cod liver oil up to standard in Vitamin D content and except as to the sale of activated or irradiated ergosterol (as hereinabove limited) and/or such activated or irradiated ergosterol with halibut liver oil, for administration to dogs, cats, and foxes, this license, together with the other named Licensees of this group, shall have exclusive rights in the United States and the territory subject to the jurisdiction thereof, and in the remainder of the permitted territory such rights shall be nonexclusive."

IV

That section 9 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"9. No advertising shall contain extravagant or unwarranted statements. The Licensee shall not in its advertising, without the approval of the Licensor, circulate any advertising material relating to the Steenbock process, the Steenbock patents, the University of Wisconsin, or the Licensor; and such advertising material shall be first submitted to the Licensor for its approval. Advertisement by the Licensee of the preparation in neutral oil and/or in other medicinally inert media carrying activated or irradiated ergosterol in concentration greater than 400 U. S. P. X. 1934 Revised Vitamin D units per gram shall be limited to those publications which primarily serve the drug trade and/or the medical profession; provided, however, that activated or irradiated ergosterol (as hereinabove limited) and/or such activated or irradiated ergosterol with halibut liver oil, for administration to dogs, cats, and foxes may be advertised in publications serving the veterinary profession and/or the public."

V

Wherever in said license agreement of March 21, 1929, the potency of any product is described as one hundred (100) times the potency of standard cod liver oil as defined in the appendix thereto, such description is hereby modified to read "10,000 U. S. P. X. 1934 Revised Vitamin D units per gram," and wherever in said license agreement the potency of any product is described as five (5) times the potency of standard cod liver oil as defined in the appendix thereto, such description is hereby modified to read "400 U. S. P. X. 1934 Revised Vitamin D units per gram."

VI

Except as herein expressly modified, all of the terms, conditions, and provisions of said license agreement of March 21, 1929, between the parties hereto, shall be and remain in full force and effect.

IN WITNESS WHEREOF the parties hereto have duly executed this instrument the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest: L. M. HANKS, *Secretary.*

MEAD JOHNSON & COMPANY,
By L. D. JOHNSON, *President.*

Attest: O. MCCUTCHEON, *Secretary.*

HARRY STEENBOCK, *Patentee.*

L. D. BARNEY, *Witness.*

Digitized by Google

SUPPLEMENTAL AGREEMENT

This Supplemental Agreement made this 3rd day of June 1937 between Wisconsin Alumni Research Foundation, a Wisconsin Corporation not for private profit (hereinafter called Licensor), Harry Steenbock of Madison, Wisconsin (hereinafter called Patentee), and Mead Johnson & Company, a corporation of the State of Indiana, with its principal place of business at Evansville, Indiana (hereinafter called the Licensee),

WITNESSETH:

Whereas the parties hereto entered into a certain license agreement under date of March 21, 1929, in respect of United States Letters Patent No. 1,680,818, issued August 14, 1928, upon the application of Harry Steenbock, and certain applications for United States Patents filed by Harry Steenbock, upon which said applications the following United States Letters Patent have issued upon the following dates respectively:

Patent No. 1,871,135, issued August 9, 1932,
Patent No. 1,871,136, issued August 9, 1932,
Patent No. 2,057,399, issued October 13, 1936, and

Whereas said license agreement, pursuant to the terms thereof, was identical in all respects to licenses simultaneously granted to Abbott Laboratories; Parke, Davis & Company; E. R. Squibb & Sons; Winthrop Chemical Company; and

Whereas said license agreement and the license agreements with said other companies above mentioned (which said companies, together with the Licensee, are hereinafter sometimes designated as the "Licensees of this group," said phrase meaning the present Licensees under said patents) were, by Supplemental Agreements between the Licensor and each of the Licensees thereunder, entered into October 15, 1936, modified each in the same respects; and

Whereas, since the execution of said license agreements of March 21, 1929, sources of Vitamin D and methods of producing the same, different from the methods of the patents herein licensed, have been discovered and made available with the result that there are now upon the market in the territory covered by said agreements additional Vitamin D pharmaceutical preparations sold in competition with products sold by the Licensees of this group under said licenses; and

Whereas the Licensor desires to stimulate and encourage the efforts of the Licensee and other Licensees of this group to increase the sale of products sold under said licenses by reducing in certain respects the royalty rates provided for in said license agreements of March 21, 1929; and

Whereas it is the opinion of the Licensor and the Licensees of this group that economic conditions in the territory covered by said license agreements, particularly in the United States of America, are such that the manufacturing and distributing costs of products made and sold under said licenses are likely to increase substantially in the immediate future; and

Whereas in order to stimulate further and encourage the efforts of the Licensees of this group to increase the sale of products sold under said licenses, and in view of the probable general rise in costs of raw material and labor hereinabove referred to, the Licensor intends to state as minimum net sales prices for "Viosterol," Vitamin D in propylene glycol sold by Winthrop under the trade-mark "Drisdol" and cod-liver oil with "Viosterol" for a period of three years commencing January 1, 1937, the present minimum net sales prices of said products now in effect; and

Whereas, since the execution of said license agreements of March 21, 1929, the Licensor and the Licensees of this group have jointly commenced an action for infringement of certain of the patents herein licensed against General Development Laboratories, Inc., a Delaware corporation, in the United States District Court for the Eastern District of New York, said cause being entitled "*Wisconsin Alumni Research Foundation et al.* v. *General Development Laboratories, Inc.*, Equity No. 7871," and which said cause is now pending; and

Whereas it is the mutual desire of the Licensor and of the Licensees of this group that the Licensor shall be empowered to grant not to exceed two additional licenses under the patents herein licensed to certain concerns hereinafter named (hereinafter sometimes referred to as "additional Licensees") if the granting of such licenses shall be necessary to enable the Licensor to compromise said litigation above referred to; and

Whereas it is the mutual desire of the Licensor and the Licensees of this group that said additional licenses shall be upon terms and conditions not more favorable to the Licensees thereunder than the licenses heretofore granted to the Licensees of this group (except the Winthrop Chemical Company) are to such Licensees of

Digitized by Google

this group (except the Winthrop Chemical Company), as heretofore and as herein amended, save with respect to minimum annual guaranteed royalty payments hereinafter provided for; and

Whereas it is further the mutual desire of the Licensor and the Licensees of this group to modify in certain other respects this license agreement and in the same respects to modify each of said other license agreements with the Licensees of this group, so that all of said licenses may remain identical in terms, except that the license to the Winthrop Chemical Company shall not be identical in terms with said other license agreements in certain respects as hereinafter set forth: Now, therefore, it is agreed—

I

The last paragraph of Section 1 of said license agreement of March 21, 1929, is hereby amended to read as follows:

The treated cod liver oils shall be of a potency of 85 U. S. P. XI Vitamin D units per gram and/or of a potency of 400 U. S. P. XI Vitamin D units per gram, which standards may by mutual agreement of the Licensor and not less than all of the Licensees of this group and of such companies as may hereafter become Licensees of the Licensor, pursuant to this agreement, except one, be changed from time to time; the Licensor, and not less than all of the Licensees of this group and said additional licensees except one, may also by mutual agreement change the potency of 10,000 U. S. P. XI Vitamin D units per gram herein established to some other potency or potencies.

II

Section 4 of said license agreement of March 21, 1929, as amended by said Supplemental Agreement of October 15, 1936, is hereby further amended to read as follows:

IV. The said license for the manufacture and sale of activated or irradiated ergosterol for use in human medicine and/or for human pharmaceutical purposes only, in the form of an oil solution containing a potency of 10,000 U. S. P. XI Vitamin D units per gram and the use of activated or irradiated ergosterol for the purpose of producing cod liver oil of a potency of 85 U. S. P. XI Vitamin D units per gram, and the use of activated or irradiated ergosterol for the purpose of producing in a medicinally neutral oil and/or in cod liver oil a preparation or preparations containing 400 U. S. P. XI Vitamin D units per gram, and the said license for the manufacture and sale of activated or irradiated ergosterol (as hereinabove limited), and/or such activated or irradiated ergosterol with halibut liver oil, for administration to dogs, cats, and foxes only, extend throughout the world save for Great Britain (including North Ireland, and the Isle of Man) and Germany. As to the rights granted by this license, except as to the enrichment of deficient cod liver oil up to 85 U. S. P. XI Vitamin D units per gram and except as to the sale of activated or irradiated ergosterol (as hereinabove limited) and/or such activated or irradiated ergosterol with halibut liver oil for administration to dogs, cats, and foxes, this Licensee, together with the other named Licensees of this group, shall have exclusive rights in the United States and the territory subject to the jurisdiction thereof, and in the remainder of the permitted territory such rights shall be nonexclusive; provided, however, that the Licensor may, subject to the following restrictions, grant two additional licenses under the patents herein licensed, one of said licenses to the William S. Merrell Company, Cincinnati, Ohio, and the other of said licenses either to the Frederick Stearns & Company, Detroit, Michigan, or the E. L. Patch Company, Boston, Massachusetts. Such additional licenses shall be granted by the Licensor only if the granting thereof is, in the opinion of the Licensor, necessary to effectuate a compromise of the pending litigation between the Licensor and Licensees of this group, as plaintiffs, and General Development Laboratories, Inc., a Delaware corporation, as defendant, now pending in the United States District Court for the Eastern District of New York and entitled *Wisconsin Alumni Research Foundation, et al,* vs. *General Development Laboratories, Inc.*, Equity No. 7871". Any such additional licenses shall be upon terms and conditions not more favorable to the licensees thereunder than the licenses to the Licensees of this group (except the Winthrop Chemical Company) are to the Licensees of this group (except the Winthrop Chemical Company), except that there need not be incorporated therein provisions for any minimum annual guaranteed royalty payments corresponding to such minimum annual guaranteed royalty payments as are provided for in Section 7 of this license and of the licenses heretofore granted to the Licensees of this group, as amended herein.

Digitized by Google

It is understood and agreed that such additional Licensees shall be prohibited, by appropriate restrictions in any license agreements that may be entered into between the Licensor and such additional Licensees, from employing the process described and claimed in United States Letters Patent No. 1,676,579 to George Sperti and from advertising the use of said process in connection with products sold under said license agreements; provided, however, that in the event the Licensor makes available to the Licensees of this group licenses under said Sperti patent from the owner thereof, at no additional royalty to that specified in this agreement, then and in such event none of the Licensees, including the said additional licensees, shall be so prohibited from employing the process of said Sperti patent or from advertising the same in connection with products sold under such license agreements.

III

Section 7 of said license agreement of March 21, 1929, is hereby amended to read as follows:

7. The Licensee agrees to pay to the Licensor within thirty (30) days from the end of each three (3) calendar months' period while this license agreement is in effect, and beginning as of January 1st, 1937, a sum equivalent to _____ percent of the net sales of the preparations in neutral oil of a potency of 10,000 U. S. P. XI Vitamin D units per gram sold during the preceding three (3) calendar months, and to pay to the Licensor a sum equivalent to _____ percent of the net sales of cod liver oil or neutral oil to which activated or irradiated ergosterol has been added in lesser concentration as sold during the preceding three (3) calendar months. For preparations of irradiated or activated ergosterol made and sold in media other than oils either as a simple source of Vitamin D or in compound medicines, the Licensee agrees to pay the Licensor _____ percent of the net sales of such product when the antirachitic potency of the product gram for gram is less than or equal to 400 U. S. P. XI Vitamin D units per gram, but if the antirachitic potency of such product is more than 400 U. S. P. XI Vitamin D units per gram the Licensee agrees to pay _____ percent of an amount equal to the net sales price currently in effect of the irradiated ergosterol added to said product, sold as Viosterol, or, by Winthrop, under its trade-mark "Drisdol." The Licensee guarantees that the sum paid for each year while this license agreement is in effect shall be not less than _____ dollars. The Licensee agrees to pay to the Licensor on the termination of this license by the lapse of time or otherwise, _____ percent of the net sales price of the activated or irradiated ergosterol for medicinal and pharmaceutical purposes manufactured under this license, but not then sold, and _____ percent of the net sales price on cod liver oil or neutral oil to which has been added activated or irradiated ergosterol, but which cod liver oil or neutral oil has not then been sold, said last-mentioned sums to be paid within six (6) months from the date of termination of this license.

The term "net sales" as used in this agreement, means that amount computed upon the listed selling price f. o. b. place of manufacture minus all discounts to the trade, and makes allowances for returned goods.

It is understood and agreed that with respect to the Winthrop Chemical Company the royalty rates payable by it shall be respectively ____ percent wherever ____ percent is referred to in this section of this agreement and ____ percent wherever ____ percent is referred to in this section of this agreement, and the minimum guaranteed annual royalty payments payable by it shall be not less than _____ Dollars, such higher royalty rates and higher minimum guaranteed annual royalty payments to be in effect with respect to said Winthrop Chemical Company unless and until said Winthrop Chemical Company exercises its option referred to under Section 19 of this agreement, as amended herein.

The Licensee agrees to continue, while this license agreement is in effect, the use of irradiated ergosterol manufactured under this license agreement in all products sold by it in the United States under the following names or designations, in an amount not less than the average percentage of U. S. P. XI Vitamin D units of irradiated ergosterol which was used in said products respectively during the year 1936:

Cod liver oil with "Viosterol."
Halibut Liver Oil with "Viosterol" (both fluid and capsules).
"Haliver" Oil with "Viosterol" (both fluid and capsules, and "Viosterol".

Digitized by Google

IV

Section 12 of said license agreement of March 21, 1929, is hereby amended by deleting therefrom the following language:

"In accordance with the provisions of this paragraph 12, the Licensor establishes the following schedule of minimum prices:

(a) Five cubic centimeters neutral oil prepared to one hundred times the vitamin D potency of standard cod liver oil, per dozen, with maximum discounts of % and % for cash to all classes of customers.

(b) Fifty cubic centimeters of the same material, per dozen, with maximum discounts of % and % for cash to all classes of customers.

(c) Three-ounce bottle of cod liver oil enriched to five times the vitamin D potency of standard cod liver oil, per dozen, with maximum discounts of % and % for cash to all classes of customers.

(d) Sixteen-ounce bottle of the same material, per dozen, with maximum discounts of % and % for cash to all classes of customers.

(e) No free goods of any kind or any other inducements are to be offered the effect or tendency of which would be to lower the minimum prices above established,"

and by adding thereto, at the end thereof, the following:

"Pursuant to the powers conferred upon the Licensor by this section of this agreement, and in accordance with the provisions of this section, the minimum net sales prices of products licensed hereunder shall, commencing with January 1, 1937, and continuing to and including December 31, 1939, be as follows:

	List Price	Minimum to Retailer	Minimum to Wholesaler
5 cubic centimeters of activated or irradiated ergosterol in neutral oil or propylene glycol of a potency of 10,000 U. S. P. XI Vitamin D units per gram, per dozen			
20 cubic centimeters of activated or irradiated ergosterol in neutral oil or propylene glycol of a potency of 10,000 U. S. P. XI Vitamin D units per gram, per dozen			
50 cubic centimeters of activated or irradiated ergosterol in neutral oil or propylene glycol of a potency of 10,000 U. S. P. XI Vitamin D units per gram, per dozen			
3 ounces cod liver oil with activated or irradiated ergosterol, per dozen			
16 ounces cod liver oil with activated or irradiated ergosterol, per dozen			
Maximum discount %	X		

No free goods of any kind or any other inducements are to be offered, the effect or tendency of which would be to lower the minimum prices above established.

V

Section 13 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"13. As to the territory in which the Licensees have exclusive rights until and unless changed by the mutual understanding of a majority of the Licensees of this group, and of such companies as may hereafter become Licensees of the Licensor hereunder, the Licensee agrees that its preparation or preparations of activated or irradiated ergosterol in neutral oil giving such a preparation a potency of 10,000 U. S. P. XI Vitamin D units per gram shall be marketed in containers five (5) cubic centimeters in capacity, in containers twenty (20) cubic centimeters in capacity and/or in containers fifty (50) cubic centimeters in capacity~~; and/or in container~~ and that its preparations having a vitamin D potency of 400 U. S. P. XI Vitamin D units per gram shall be marketed in containers of three and/or sixteen fluid ounces."

VI

Section 14 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"14. The Licensor and/or Patentee agree that they will grant to no one in the exclusive territory covered by this license, the right to use said inventions for the

Digitized by Google

purpose of preparing cod liver oil of a higher degree of potency than 85 U. S. P. XI Vitamin D units per gram, insofar as such cod liver oil is for human consumption, except as hereinbefore specifically provided in Section 4 hereof, as amended herein, and except as hereinafter provided in Section X of this Supplemental Agreement."

VII

Section 18 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"18. The Licensor and Patentee agree that the licenses granted to other Licensees in this group and to additional Licensees, pursuant to the terms of Section 4 hereof, as herein amended, shall be of the same and identical terms as this license except as provided in Section 4 hereof, as herein amended, with respect to additional licenses that may hereafter be granted and except as to the Winthrop Chemical Company, as provided in Sections 7 and 19 hereof, as herein amended."

VIII

Section 19 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"19. This license may be terminated at any time after three (3) years from January 1st, 1937, by notice in writing addressed to the Licensor three (3) months before the expiration date named in said notice.

"The Winthrop Chemical Company, Inc., shall have the additional right to terminate its license at any time by notice in writing addressed to the Licensor three (3) months before the expiration date named in said notice.

"The Winthrop Chemical Company shall have the option at any time within three (3) years from January 1, 1937, to waive its said right of cancellation during said three (3) year period by notifying the Licensor in writing of its election to waive such right of cancellation during such three (3) year period, in which event the provisions herein made applicable to the other Licensees of this group shall become applicable to Winthrop Chemical Company, Inc. also."

IX

Section V of said Supplemental Agreement of October 15, 1936, is hereby amended to read as follows:

"V. Wherever in said license agreement of March 21, 1929, the potency of any product is described as equal to standard cod-liver oil, such description is hereby modified to read '85 U. S. P. XI Vitamin D units per gram'. Wherever in said license agreement the potency of any product is described as one hundred (100) times the potency of standard cod liver oil (as defined in the appendix thereto), such description is hereby modified to read '10,000 U. S. P. XI Vitamin D units per gram'. Wherever in said license agreement the potency of any product is described as five (5) times the potency of standard cod-liver oil as defined in the appendix thereto, such description is hereby modified to read '400 U. S. P. XI Vitamin D units per gram'.

X

In the event that any of the Licensees of this group should terminate its agreement pursuant to the terms of Section 19 of said license agreement of March 21, 1929, as herein amended, the Licensor shall have the right to grant a license under the patents herein licensed upon the same terms and conditions of said license agreements of March 21, 1929, to the Licensees of this group (except the Winthrop Chemical Company), as herein amended, to any person, firm or corporation not disapproved by two of the remainder of the present group of five (5) Licensees.

XI

Except as herein expressly modified, all of the terms, conditions and provisions of said license agreement of March 21, 1929, between the parties hereto, as amended by said Supplemental Agreement of October 15, 1936, between the parties hereto shall be and remain in full force and effect.

Digitized by Google

In Witness whereof the parties hereto have duly executed this instrument the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

L. M. HANKS, *Secretary.*
MEAD JOHNSON & COMPANY,
By L. D. JOHNSON, *President.*

Attest:

O. MCCUTCHEON, *Secretary.*
HARRY STEENBOCK, *Patentee.*

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., March 20, 1939.

Mr. L. D. JOHNSON,
President, Mead Johnson & Co.,
Evansville, Ind.

DEAR MR. JOHNSON: In the past the foundation has on frequent occasions discussed with its licensees the matter of making more widespread the use of various forms of irradiated vitamin D in new and existing products of the licensees. More recently discussions have been had with reference to an attempt to accomplish this result by the establishment of a new royalty rate, upon a per million vitamin D unit basis, upon products not now containing irradiated vitamin D.

In line with these discussions, the foundation is now offering its pharmaceutical licensees a new proposal with the hope that all of them will see fit to adopt it extensively. It is agreeable to the foundation, commencing May 1, 1939, and continuing thereafter during the lives of the licensed patents, that royalties upon products of the licensees containing vitamin D combined with another ingredient or ingredients (other than the vitamin D carrier), but not containing any form of irradiated vitamin D at the date of this writing, shall be at the rate of 7 cents per million U. S. P. units of irradiated vitamin D of whatever form hereafter contained therein. In calculating royalties upon such products, the labeled number of vitamin D units or the actual number of irradiated vitamin D units used in the products, whichever amount is lower, shall be used as a base for such computation.

Products covered hereby shall include:

(*a*) Present products of the licensees now upon the market in which a source of vitamin D other than some form of irradiated vitamin D is used in combination with some other ingredient or ingredients (other than the vitamin D carrier), and in which the licensees replace, in whole or in part, such other source of vitamin D with irradiated vitamin D of any form.

(*b*) Products of the licensees not now upon the market but which may hereafter be introduced by the licensees and which contain any form of irradiated vitamin D combined with some other ingredient or ingredients (other than the vitamin D carrier).

Royalties shall be due and payable when products embraced within the scope of this letter are sold by the licensees and not when manufactured.

Royalties upon present licensed products of each of the licensees (a list of your company's products is attached hereto) shall be in no way affected by the proposal contained in this letter and shall continue as heretofore.

It is the intent of the foundation that the proposal contained in this letter shall embrace all forms of irradiated vitamin D, including irradiated ergosterol, delsterol, irradiated dry yeast, irradiated 7-dehydrocholesterol, and all other forms of irradiated vitamin D produced by any licensee under the Steenbock patents that may now or hereafter become available to the licensees.

The foundation requests that it be advised by the licensees of the products in which irradiated vitamin D is hereafter used by them pursuant to this proposal, including the names of such products, the dates upon which the licensees offer such products for sale and the form and amount of irradiated vitamin D used therein.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
H. L. RUSSELL, *Director.*

Digitized by Google

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., April 27, 1939.

Mr. L. D. JOHNSON,
President, Mead Johnson & Co.,
Evansville, Ind.

DEAR MR. JOHNSON: Under date of March 20, 1939, the foundation wrote to each of the licensees announcing a new royalty program, effective May 1, 1939, with reference to certain products. With respect to the products covered by that letter, the royalty rate was then set at — per million U. S. P. units of irradiated vitamin D.

The foundation has given further consideration to this matter and is of the belief that if this royalty rate is reduced to a — per million rate, a much broader use of irradiated products will result. Therefore, this letter is the foundation's formal notification to its pharmaceutical licensees modifying the previous letter of March 20, 1939, by reducing the royalty rate referred to therein to a royalty rate of — per million, U. S. P. units of irradiated vitamin D.

With the exception of this point the other conditions and provisions of the letter of March 20, 1939, will be and continue in effect.

The foundation requests that it be advised by the licensees of the products in which irradiated vitamin D is hereafter used by them pursuant to this modification of our former proposal, including the names of such products, the dates upon which the licensees offer such products for sale and the form and amount of irradiated vitamin D used therein.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
H. L. RUSSELL, *Director.*

Plaintiff issued licenses identical in terms to that of Mead Johnson & Company to the following companies:

Abbott Laboratories,
Parke, Davis & Company,
E. R. Squibb & Sons,
Winthrop Chemical Company, Inc.

The foregoing four license agreements have been modified in the same manner as the Mead Johnson & Company license agreement has been modified, except for variations contained in the Supplemental Agreement of May 31st, 1937, with the Winthrop Chemical Company, Inc., hereinafter set forth.

SUPPLEMENTAL AGREEMENT

This Supplemental Agreement made this 31st day of May 1937, between Wisconsin Alumni Research Foundation, a Wisconsin corporation not for private profit (hereinafter called Licensor), Harry Steenbock of Madison, Wisconsin (hereinafter called Patentee), and Winthrop Chemical Company, Inc., a corporation of the State of New York with its principal place of business at New York City, New York:

WITNESSETH:

Whereas, the parties hereto entered into a certain license agreement under date of March 21, 1929, in respect of United States Letter Patent No. 1,680,818, issued August 14th, 1928, upon the application of Harry Steenbock, and certain applications for United States Patents filed by Harry Steenbock, upon which said applications the following United States Letters Patents have issued upon the following dates respectively:

Patent No. 1,871,135, issued August 9, 1932,
Patent No. 1,871,136, issued August 9, 1932,
Patent No. 2,057,399, issued October 13, 1936, and

Whereas, said license agreement, pursuant to the terms thereof, was identical in all respects to licenses simultaneously granted to Abbott Laboratories, Mead Johnson & Company, Parke, Davis & Company, and E. R. Squibb & Sons, and

Whereas, said license agreement and the license agreements with said other companies above mentioned (which said companies, together with the Licensee, are hereinafter sometimes designated as the "Licensees of this group," said phrase

Digitized by Google

meaning the present licensees under said patents) were, by Supplemental Agreements between the Licensor and each of the Licensees thereunder, entered into October 15, 1936, modified each in the same respects, and

Whereas, since the execution of said license agreements of March 21, 1929, sources of Vitamin D and methods of producing the same, different from the methods of the patents herein licensed, have been discovered and made available with the result that there are now upon the market in the territory covered by said agreements additional Vitamin D pharmaceutical preparations sold in competition with products sold by the Licensees of this group under said licenses, and

Whereas, the Licensor desires to stimulate and encourage the efforts of the Licensee and other Licensees of this group to increase the sale of products sold under said licenses by reducing in certain respects the royalty rates provided for in said license agreements of March 21, 1929, and

Whereas, it is the opinion of the Licensor and the Licensees of this group that economic conditions in the territory covered by said license agreements, particularly in the United States of America, are such that the manufacturing and distributing costs of products made and sold under said licenses are likely to increase substantially in the immediate future, and

Whereas, in order to stimulate further and encourage the efforts of the Licensees of this group to increase the sale of products sold under said licenses and in view of the probable general rise in costs of raw material and labor hereinabove referred to, the Licensor intends to state as minimum net sales prices for "Viosterol," Vitamin D in propylene glycol sold by the Licensee under the trade-mark "Drisdol" and cod liver oil with "Viosterol" for a period of three years commencing January 1, 1937, the present minimum net sales prices of said products now in effect, and

Whereas, since the execution of said license agreements of March 21, 1929, the Licensor and the Licensees of this group have jointly commenced an action for infringement of certain of the patents herein licensed against General Development Laboratories, Inc., a Delaware corporation, in the United States District Court for the Eastern District of New York, said cause being entitled "*Wisconsin Alumni Research Foundation et al.* v. *General Development Laboratories, Inc.*, Equity No. 7871," and which said cause is now pending, and

Whereas, it is the mutual desire of the Licensor and of the Licensees of this group that the Licensor shall be empowered to grant not to exceed two additional licenses under the patents herein licensed to certain concerns hereinafter named (hereinafter sometimes referred to as "additional Licensees") if the granting of such licenses shall be necessary to enable the Licensor to compromise said litigation above referred to, and

Whereas, it is the mutual desire of the Licensor and the Licensees of this group that said additional licenses shall be upon terms and conditions not more favorable to the Licensees hereunder than the licenses heretofore granted to the Licensees of this group, (except the Licensee) are to such Licensees of this group (except the Licensee), as heretofore and as herein amended, save with respect to minimum annual guaranteed royalty payments hereinafter provided for, and

Whereas, it is further the mutual desire of the Licensor and the Licensees of this group to modify in certain other respects this license agreement and to modify each of said other license agreements with the Licensees of this group, so that all of said licenses may remain identical in terms, except that the license to the Licensee shall not be identical in terms with said other license agreements in certain respects as hereinafter set forth. Now, therefore, it is agreed:

I

The last paragraph of Section 1 of said license agreement of March 21, 1929, is hereby amended to read as follows:

The treated cod liver oils shall be of a potency of 85 U. S. P. XI Vitamin D units per gram and/or of a potency of 400 U. S. P. XI Vitamin D units per gram, which standards may by mutual agreement of the Licensor and not less than all of the Licensees of this group and of such companies as may hereafter become Licensees of the Licensor, pursuant to this agreement, except one, be changed from time to time; the Licensor, and not less than all of the Licensees of this group and said additional licensees except one, may also by mutual agreement change the potency of 10,000 U. S. P. XI Vitamin D units per gram herein established to some other potency or potencies.

Digitized by Google

II

Section 4 of said license agreement of March 21, 1929, as amended by said Supplemental Agreement of October 15, 1936, is hereby further amended to read as follows:

IV. The said license for the manufacture and sale of activated or irradiated ergosterol for use in human medicine and/or for human pharmaceutical purposes only, in the form of an oil solution containing a potency of 10,000 U. S. P. XI Vitamin D units per gram and the use of activated or irradiated ergosterol for the purpose of producing cod liver oil of a potency of 85 U. S. P. XI Vitamin D units per gram, and the use of activated or irradiated ergosterol for the purpose of producing in a medicinally neutral oil and/or in cod liver oil a preparation or preparations containing 400 U. S. P. XI Vitamin D units per gram, and the said license for the manufacture and sale of activated or irradiated ergosterol (as hereinabove limited), and/or such activated or irradiated ergosterol with halibut llver oil, for administration to dogs, cats, and foxes only, extend throughout the world save for Great Britain (including North Ireland, and the Isle of Man) and Germany. As to the rights granted by this license, except as to the enrichment of deficient cod liver oil up to 85 U. S. P. XI Vitamin D units per gram and except as to the sale of activated or irradiated ergosterol (as hereinabove limited) and/or such activated or irradiated ergosterol with halibut liver oil, for administration to dogs, cats, and foxes, this Licensee, together with the other named Licensees of this group, shall have exclusive rights in the United States and the territory subject to the jurisdiction thereof, and in the remainder of the permitted territory such rights shall be nonexclusive; provided, however, that the Licensor may, subject to the following restrictions, grant two additional licenses under the patents herein licensed, one of said licenses to the William S. Merrell Company, Cincinnati, Ohio, and the other of said licenses either to the Frederick Stearns & Company, Detroit, Michigan, or the E. L. Patch Company, Boston, Massachusetts. Such additional licenses shall be granted by the Licensor only if the granting thereof is, in the opinion of the Licensor, necessary to effectuate a compromise of the pending litigation between the Licensor and Licensees of this group, as plainteffs, and General Development Laboratories, Inc., a Delaware corporation, as defendant, now pending in the United States District Court for the Eastern District of New York and entitled "*Wisconsin Alumni Research Foundation et al.* v. *General Development Laboratories, Inc.* Equity No. 7871." Any such additional licenses shall be upon terms and conditions not more favorable to the licensees thereunder than the licenses to the Licensees of this group (except the Licensee) are to the Licnesees of this group (except the Licensee), except that there need not be incorporated therein provisions for any minimum annual guaranteed royalty payments corresponding to such minimum annual guaranteed royalty payments as are provided for in Section 7 of this license and of the licenses heretofore granted to the Licensees of this group, as amended herein.

It is understood and agreed that such additional Licensees shall be prohibited, by appropriate restrictions in any license agreements that may be entered into between the Licensor and such additional Licensees, from employing the process described and claimed in United States Letters Patent No. 1,676,579, to George Sperti and from advertising the use of said process in connection with products sold under said license agreements; provided however, that in the event the Licensor makes available to the Licensees of this group licenses under said Sperti patent from the owner thereof, at no additional royalty to that specified in this agreement, then and in such event none of the licensees, including the said additional licensees, shall be so prohibited from employing the process of said Sperti patent or from advertising the same in connection with products sold under such license agreements.

III

Section 7 of said license agreement of March 21, 1929, is hereby amended to read as follows:

7. The Licensee agrees to pay to the Licensor within thirty (30) days from the end of each three (3) calendar months period while this license agreement is in effect, and beginning as of January 1st, 1937, a sum equivalent to % of the net sales of the preparations in neutral oil of a potency of 10,000 U. S. P. XI Vitamin D units per gram sold during the preceding three (3) calendar months, and to pay to the Licensor a sum equivalent to % of the net sales of cod liver oil or neutral oil to which activated or irradiated ergosterol has been added in lesser concentration as sold during the preceding three (3) calendar months. For preparations of irradiated or activated ergosterol made and sold in media

Digitized by Google

other than oils either as a simple source of Vitamin D or in compound medicines, the Licensee agrees to pay the Licensor % of the net sales of such product when the antirachitic potency of the product gram for gram is less than or equal to 400 U. S. P. XI Vitamin D units per gram, but if the antirachitic potency of such product is more than 400 U. S. P. XI Vitamin D units per gram, the Licensee agrees to pay % of an amount equal to the net sales price currently in effect of the irradiated ergosterol added to said product, sold as Viosterol, or by the Licensee, under its trade-mark "Drisdol." The Licensee guarantees that the sum paid for each year while this license agreement is in effect shall be not less than Dollars. The Licensee agrees to pay to the Licensor on the termination of this license by the lapse of time or otherwise % of the net sales price of the activated or irradiated ergosterol for medicinal and pharmaceutical purposes manufactured under this license, but not then sold, and % of the net sales price on cod liver oil or neutral oil to which has been added activated or irradiated ergosterol, but which cod liver oil or neutral oil has not then been sold, said last mentioned sums to be paid within six (6) months from the date of termination of this license.

The term "net sales" as used in this agreement, means that amount computed upon the listed selling price f. o. b. place of manufacture minus all discounts to the trade, and makes allowances for returned goods.

It is understood and agreed that in the event the Licensee exercises its option referred to under Section 19 of this agreement, as amended herein, commencing with the date said option is exercised and continuing thereafter during the life of this agreement the royalty rates payable by the Licensee shall be the same as the royalty rates applicable, commencing with January 1, 1937, to the other Licensees of this group, to wit: percent wherever percent is referred to in this section of this agreement and percent wherever percent is referred to in this section of this agreement, and the minimum guaranteed annual royalty payments payable by it shall be not less than Dollars.

The Licensee agrees to continue, while this license agreement is in effect, the use of irradiated ergosterol manufactured under this license agreement in all products sold by it in the United States under the following names or designations, in an amount not less than the average percentage of U. S. P. XI Vitamin D units of irradiated ergosterol which was used in said products respectively during the year 1936:

Cod liver oil with "Viosterol",
Halibut Liver Oil with "Viosterol",
(both fluid and capsules)
"Haliver" Oil with "Viosterol",
(both fluid and capsules), and
"Viosterol".

IV

Section 12 of said license agreement of March 21, 1929, is hereby amended by deleting therefrom the following language:

"In accordance with the provisions of this paragraph 12, the Licensor establishes the following schedule of minimum prices:

"(a) Five cubic centimeters neutral oil prepared to one hundred times the vitamin D potency of standard cod liver oil, $---------- per dozen, with maximum discounts of --% and --% for cash to all classes of customers.

"(b) Fifty cubic centimeters of the same material, $---------- per dozen, with maximum discounts of --% and --% for cash to all classes of customers.

"(c) Three ounce bottle of cod liver oil enriched to five times the vitamin D potency of standard cod liver oil, $---------- per dozen, with maximum discounts of --% and --% for cash to all classes of customers.

"(d) Sixteen ounce bottle of the same material, $---------- per dozen, with maximum discounts of --% and --% for cash to all classes of customers.

"(e) No free goods of any kind or any other inducements are to be offered, the effect or tendency of which would be to lower the minimum prices above established",

and by adding thereto, at the end thereof, the following:

Pursuant to the powers conferred upon the Licensor by this section of this agreement, and in accordance with the provisions of this section, the minimum net sales prices of products licensed hereunder shall, commencing with January 1, 1937, and continuing to and including December 31, 1939, be as follows:

Digitized by Google

	List Price	Minimum to Retailer	Minimum to Wholesaler
5 cubic centimeters of activated or irradiated ergosterol in neutral oil or propylene glycol of a potency of 10,000 U. S. P. XI Vitamin D units per gram, per dozen			
20 cubic centimeters of activated or irradiated ergosterol in neutral oil or propylene glycol of a potency of 10,000 U. S. P. XI Vitamin D units per gram, per dozen			
50 cubic centimeters of activated or irradiated ergosterol in neutral oil or propylene glycol of a potency of 10,000 U. S. P. XI Vitamin D units per gram, per dozen			
3 ounces cod-liver oil with activated or irradiated ergosterol, per dozen			
16 ounces cod-liver oil with activated or irradiated ergosterol, per dozen			
Maximum discount, percent			

No free goods of any kind or any other inducements are to be offered, the effect or tendency of which would be to lower the minimum prices above established.

V

Section 13 of said license agreement of March 21 1929, is hereby amended to read as follows:

"13. As to the territory in which the Licensees have exclusive rights until and unless changed by the mutual understanding of a majority of the Licensees of this group, and of such companies as may hereafter become Licensees of the Licensor hereunder, the Licensee agrees that its preparation or preparations of activated or irradiated ergosterol in neutral oil giving such a preparation a potency of 10,000 U. S. P. XI Vitamin D units per gram shall be marketed in containers five (5) cubic centimeters in capacity, in containers twenty (20) cubic centimeters in capacity and/or in containers fifty (50) cubic centimeters in capacity; and that its preparations having a vitamin D potency of 400 U. S. P. XI Vitamin D units per gram shall be marketed in containers of three and/or sixteen fluid ounces."

VI

Section 14 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"14. The Licensor and/or Patentee agree that they will grant to no one in the exclusive territory covered by this license, the right to use said inventions for the purpose of preparing cod liver oil of a higher degree of potency than 85 U. S. P. XI Vitamin D units per gram, insofar as such cod liver oil is for human consumption, except as hereinbefore specifically provided in Section 4 hereof, as amended herein, and except as hereinafter provided in Section X of this Supplemental Agreement."

VII

Section 18 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"18. The Licensor and Patentee agree that the licenses granted to other Licensees in this group and to additional Licensees, pursuant to the terms of Section 4 hereof, as herein amended, shall be of the same and identical terms as this license except as provided in Section 4 hereof, as herein amended, with respect to additional licenses that may hereafter be granted and except as to the Licensee, as provided in Sections 7 and 19 hereof, as herein amended."

VIII

Section 19 of said license agreement of March 21, 1929, is hereby amended to read as follows:

"19. This license may be terminated at any time after three (3) years from January 1st, 1937, by notice in writing addressed to the Licensor three (3) months before the expiration date named in said notice.

"The Licensee shall have the additional right to terminate this license at any time by notice in writing addressed to the Licensor three (3) months before the expiration date named in said notice. The Licensee shall have the option at any time within three (3) years from January 1, 1937, to waive its said right of cancellation during said three (3) year period by notifying the Licensor in writing of

Digitized by Google

its election to waive such right of cancellation during such three (3) year period, in which event the provisions herein made applicable to the other Licensees of this group shall become applicable to the Licensee also."

IX

Section V of said Supplemental Agreement of October 15, 1936, is hereby amended to read as follows:

V. Wherever in said license agreement of March 21, 1929, the potency of any product is described as equal to standard cod liver oil, such description is hereby modified to read "85 U. S. P. XI Vitamin D units per gram." Wherever in said license agreement the potency of any product is described as one hundred (100) times the potency of standard cod liver oil (as defined in the appendix thereto), such description is hereby modified to read "10,000 U. S. P. XI Vitamin D units per gram." Wherever in said license agreement the potency of any product is described as five (5) times the potency of standard cod liver oil as defined in the appendix thereto, such description is hereby modified to read "400 U. S. P. XI Vitamin D units per gram."

X

In the event that any of the Licensees of this group should terminate its agreement pursuant to the terms of Section 19 of said license agreement of March 21, 1929, as herein amended, the Licensor shall have the right to grant a license under the patents herein licensed upon the same terms and conditions of said license agreements of March 21, 1929, to the Licensees of this group (except the Licensee), as herein amended, to any person, firm or corporation not disapproved by two of the remainder of the present group of five (5) Licensees.

XI

Except as herein expressly modified, all of the terms, conditions, and provisions of said license agreement of March 21, 1929, between the parties hereto, as amended by said Supplemental Agreement of October 15, 1936, between the parties hereto shall be and remain in full force and effect.

In witness whereof the parties hereto have duly executed this instrument the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*

Attest:
[SEAL] (Signed) L. M. HANKS, *Secretary.*

WINTHROP CHEMICAL COMPANY, INC.,
By (Signed) H. G. BERTRAM, *President.*

Attest:
(Signed) J. M. MARTIN, *Secretary.*
[SEAL] (Signed) HARRY STEENBOCK, *Patentee.*
(Signed) L. D. BARNEY, *Witness.*

THIS AGREEMENT made this 15th day of November 1935 between WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for pecuniary profit, hereinafter called "FOUNDATION", and E. I. DU PONT DE NEMOURS AND COMPANY, a corporation of Delaware, having its principal office and place of business at Wilmington, Delaware, hereinafter called "DU PONT".

WITNESSETH:

Whereas the FOUNDATION is the owner of United States Letters Patent No. 1,680,818, issued August 14, 1928, upon the application of Harry Steenbock, upon Antirachitic Products and Processes; and is the owner of certain other patents relating to the subject matter of said patent, namely, United States Letters Patent No. 1,871,135 and No. 1,871,136 and may now have or hereafter acquire other inventions and patents pertaining thereto; and

Whereas Harry Steenbock of Madison, Wisconsin, has heretofore assigned to the FOUNDATION all future improvements that may be made and/or acquired by him upon the inventions described in the foregoing patents; and

Whereas, Winthrop Chemical Company and I. G. Farbenindustrie Aktiengesellschaft have agreed with the FOUNDATION not to sue any present or future Licensee of the FOUNDATION in any country (except Germany) for infringement of

Digitized by Google

any patent on activated or irradiated ergosterol and its derivatives which may or has issued on the applications for patents of Dr. Windaus or his assignee pending on November 10, 1928; and

Whereas, under date of November 15, 1929, the FOUNDATION, said Harry Steenbock, and Acetol Products, Inc., a Delaware corporation, entered into a certain license agreement with respect to the foregoing subject matter, which said agreement was thereafter amended by certain supplemental agreements between the parties thereto; and

Whereas said agreement of November 15, 1929, as thereafter amended, was assigned by the licensee, Acetol Products, Inc., to DU PONT on or about April 30, 1935, which said assignment was consented to by the FOUNDATION and Harry Steenbock; and

Whereas, DU PONT has formulated plans for and is now engaging in a program of research both fundamental and applied, in relation to the products herein licensed and other related problems; and

Whereas, the parties hereto are desirous of canceling said agreement of November 15, 1929, as amended by said supplemental agreements, and substituting therefor the agreement to be hereinafter fully set forth.

Now, therefore, in consideration of the covenants hereinafter set forth and mutually acquiesced in by the parties hereto it is agreed by and between said parties as follows:

1. The previously described agreement of November 15, 1929, as subsequently amended, shall be considered as canceled, in accordance with the terms hereof, on and after November 15, 1935. All obligations and rights accruing under or arising from said agreement shall be irrevocably terminated on November 15, 1935, unless hereinafter otherwise specifically provided for.

2. (A) The FOUNDATION grants to DU PONT a license to practice the invention disclosed and/or claimed in the aforesaid patents and/or any improvements thereon and/or additional patents now or hereafter owned or acquired by the FOUNDATION, for the manufacture and sale of activated or irradiated ergosterol or its derivatives, and/or cholesterol or its derivatives, and/or other sterols or their derivatives, said ergosterol or its derivatives, and/or cholesterol or its derivatives, and/or other sterols or their derivatives to be prepared from molds and/or other fungi and/or any other plant tissues of any kind whatsoever (excluding yeast) and/or from animal sources; provided, however, that such products may be sold by DU PONT only to other licensees of the FOUNDATION, licensed to purchase or use such products, except as hereinafter otherwise provided for. It is understood that if the aforesaid activatable materials may be produced synthetically such synthetic products are embraced within the present agreement.

(b) The FOUNDATION also grants to DU PONT a license to sell the activated or irradiated products described in Section 2 (A) hereof for use in stock, poultry and/or animal feeds, such feeds not to be used for human consumption, and to have a minimum Vitamin D potency per unit that will be sufficient to aid in the prevention of rachitic conditions in domesticated animals, including poultry. In case of misuse of the activated or irradiated products, sold under this Section 2 (b), for other purposes than for incorporation in poultry, stock and animal feeds or in case of misuse of said feeds for purposes other than those for which said feeds are customarily used, and upon notification to DU PONT by the FOUNDATION of such misuse, DU PONT agrees in good faith within a reasonable period of time to use its best endeavors to restrain such misuse.

Sales of the activated or irradiated products under this Section 2 (b) for use in stock, poultry and/or animal feeds shall not be restricted to sales to other licensees of the FOUNDATION.

(C) The FOUNDATION, also grants to DU PONT, commencing as of January 1, 1936, a license to sell the activated or irradiated products described in Section 2 (a) hereof for incorporation in bread and/or breadstuffs by commercial bakers. The term "breadstuffs" as used in this license includes rolls, buns, and biscuits (excluding crackers) and the like according to their ordinary significance to the trade in the United States.

Sales of the activated or irradiated products under this Section 2 (C) for incorporation in bread and/or breadstuffs by commercial bakers shall not be restricted to sales to other licensees of the FOUNDATION.

DU PONT agrees that sales by it of products pursuant to the license defined in this Section 2 (C) shall be made only to purchasers who have entered into written purchase contracts with DU PONT relating to said products. In addition to such provisions (not inconsistent with the provisions hereinafter set forth), as DU PONT

Digitized by Google

may in its discretion incorporate therein, such purchase contracts shall contain provisions similar to the following:

(a) A provision requiring the purchaser to use such activated or irradiated products only in such manner and in such proportions as DU PONT shall specify in such purchase contract.

(b) A provision prohibiting the purchaser from making extravagant or unwarranted statements in advertising with respect to the vitamin D content of products manufactured by such purchaser in which the herein licensed irradiated or activated products are incorporated, and requiring the purchaser to secure the approval of the FOUNDATION of all advertising material relating to such products in which the name of the Steenbock process, Dr. Steenbock, the University of Wisconsin, or the FOUNDATION is used.

(c) A provision providing for delivery to the purchaser by DU PONT of the activated or irradiated products purchased from DU PONT under such purchase contract in installments as nearly as practicable as needed by the purchaser.

(d) A provision requiring the purchaser properly to comply with all statutory requirements regarding the marking of articles offered by him for sale and covered by patents licensed hereunder to DU PONT.

(e) A provision granting to the purchaser an implied license, under patents herein licensed, to use the quantities of said irradiated or activated products purchased from DU PONT under said purchase contract, for incorporation in bread and/or breadstuffs, such implied license to continue only so long as such purchaser complies with all of the terms of said purchase contract.

The form and substance of the aforementioned provisions of such purchase contracts; namely, subparagraphs (a) to (e) inclusive, shall be subject to approval by the FOUNDATION prior to the execution of said contracts.

DU PONT shall make a bioassay (or cause to be made a bioassay at a laboratory suitable to the FOUNDATION) at intervals of not more than four months, of a sample of the product of each and every commercial baking plant which may use irradiated or activated products purchased from DU PONT under the license granted in this Section 2 (C) for incorporation in bread and/or breadstuffs and shall send a report of the results of each such bioassay to the FOUNDATION. In the event that the bioassays of the product of any baking plant show that the vitamin D potency of such product is below that contemplated by said purchase contract, then DU PONT shall (without being liable therefor) use its best efforts to cause such baking plant to modify its practice in order that its product shall thereafter have the vitamin D potency contemplated by its purchase contract.

DU PONT agrees that, in the event any purchaser of irradiated or activated products sold under this Section 2 (C), does not comply with the aforementioned provisions, subparagraphs (a) to (e), inclusive, of its purchase contract, DU PONT will, within four months after receiving written notice from the FOUNDATION setting forth in what particulars such purchaser has failed to comply with said provisions, promptly cancel its purchase contract with said purchaser, unless within such four months period said purchaser has corrected his practices so as to comply substantially with the conditions of said provisions.

In the sale of irradiated or activated ergosterol or its derivatives under the license granted in this Section 2 (C), DU PONT shall not sell said irradiated or activated ergosterol or its derivatives at a higher price than————or at a lower price than per million U. S. P. X. (Revised 1934) vitamin D units. In determining such minimum price, the charge for the bioassays heretofore referred to shall be included therein and the charge for diluents and containers for such diluents shall be excluded therefrom. In determining such maximum price, the charge for the bioassays heretofore referred to and the charge for diluents and containers for such diluents shall not be included therein.

(D) DU PONT is given the right to import the antirachitic substances licensed to it hereunder, in the event that DU PONT should deem such importation necessary for the proper and efficient conduct of its business hereunder; provided, however, that such antirachitic substances shall be of the type licensed hereunder to DU PONT, and in the event that such substances are purchased in foreign countries wherein such substances or processes relating to the production thereof have been patented to the FOUNDATION or its duly authorized agents, they shall be purchased from licensees or from parties who do not infringe such patent or patents granted to the FOUNDATION or its duly authorized agents in such countries.

Digitized by Google

3. Sales by DU PONT, under Sections 2 (a) and 2 (B) of the present agreement, may be made throughout the world save for Great Britain (including North Ireland and the Isle of Man) and Germany. Sales by DU PONT under Section 2 (C) of the present agreement may be made throughout the world save for Great Britain (including North Ireland and the Isle of Man), Canada, and Germany.

4. The rights granted under Section 2 (A) of this license shall be exclusive in the United States and the territory subject to the jurisdiction thereof, so long as DU PONT can supply the activated or irradiated products described therein in amounts sufficient to meet the regular reasonable demands therefor and upon customary trade terms. In the event that DU PONT shall be unable to supply the demand in the United States for any of said products, then after due notice from the FOUNDATION and after six months' time from the date of such notice, the FOUNDATION shall have the right to grant an additional but nonexclusive license to a third party to produce activated or irradiated material of the kind for which DU PONT failed to meet the aforementioned demand, provided that DU PONT shall not within such six months' period be able to meet such demand. The grant of the aforesaid nonexclusive license shall not affect DU PONT'S exclusive license for the production of activated or irradiated material of the other types licensed hereunder. Insofar as activated or irradiated cholesterol is concerned, it is understood that the aforementioned right of the FOUNDATION to grant a nonexclusive license therefor to a third party shall not become effective until October 1, 1940. Further, after October 1, 1940, if DU PONT'S inability to meet the demand for activated or irradiated cholesterol is due to the insufficiency of the supply of cholesterol available to DU PONT in the United States or the inability of DU PONT to find an outlet for the sale of unactivated cholesterol recovered in the process of irradiation or activation of said cholesterol, such inability shall not give rise to any right in the FOUNDATION to grant the nonexclusive license aforementioned with respect to activated or irradiated cholesterol.

In the remainder of the permitted territory, the rights granted under Section 2 (A) of this agreement shall be nonexclusive.

The rights granted under Sections 2 (B) and 2 (C) of this agreement shall be exclusive in the United States and the territory subject to the jurisdiction thereof and shall be nonexclusive for the remainder of the territory permitted by Section 3 of this agreement.

Except for the license expiring December 31, 1935, heretofore granted by the FOUNDATION to National Foods, Limited, and sublicenses granted thereunder. the FOUNDATION represents that it has not directly or indirectly granted, and agrees, that it will not hereafter directly or indirectly grant, so long as this agreement remains in force and effect, to any person, firm, or corporation other than DU PONT any right to use any irradiated or activated product covered by a patent or patents licensed hereunder (whether or not such product is licensed hereunder to DU PONT), for incorporation in bread and/or breadstuffs in the United States by commercial bakers, or for incorporation in ingredients to be used by commercial bakers in bread and/or breadstuffs in the United States (except the implied licenses to purchasers of activated or irradiated products from DU PONT, referred to in Section 2C (e) hereof) or any right to sell any such activated or irradiated product for such uses.

5. The licenses herein granted shall continue for a period of five years, until November 15, 1940. DU PONT shall have the option to renew the present agreement on the terms and conditions hereof for a further period beginning November 15, 1940, and ending with the termination of the patent last to expire of the several patents licensed hereunder and issuing on an application filed prior to August 9, 1949. The aforementioned option may be exercised by DU PONT by forwarding a written notice to the FOUNDATION of such intention on or before August 15, 1940.

6. DU PONT shall pay, as royalies to the FOUNDATION, within thirty days after the end of each calendar quarter while this license is in effect, sums equivalent to the following:

(*a*) -- percent of the net sales of the activated or irradiated products sold by DU PONT anywhere in the world under the license granted to it in Section 2 (C) hereof.

(*b*) -- percent of the net sales of the activated or irradiated products sold by DU PONT anywhere in the world under the license granted to it in Section 2 (a) hereof for use by licensees of the FOUNDATION in activating or fortifying buttermilk for human consumption.

Digitized by Google

(c) -- percent of the net sales of the activated or irradiated products sold by DU PONT anywhere in the world under the license granted to it under section 2 (A) hereof, to licensees of the FOUNDATION for use as or in human medicine.

(d) -- percent of the net sales of activated or irradiated products sold by DU PONT anywhere in the world under the licenses granted to it under Sections 2 (A) and 2(B) hereof, except the sales covered by subparagraphs (a), (b), and (c) of this section of this agreement. The term "net sales" as used above in this agreement means the listed selling price F. O. B. place of manufacture, minus discounts to the trade, allowances for all returned goods, the charge for diluents and diluent containers, but not minus, in the case of sales made under the license granted in Section 2 (C) hereof, the charge for bioassays included in the price.

If in any year ending June 30th, beginning with the year ending June 30, 1937, the total royalties paid by DU PONT to the FOUNDATION under all the licenses herein granted to DU PONT, do not equal or exceed the sum of dollars, the licenses herein granted to DU PONT under Sections 2 (A) and 2 (B) hereof, but only insofar as they relate to the manufacture and sale of irradiated or activated products for incorporation in stock, poultry and animal feeds, and the license granted to DU PONT under Section 2 (C) of this agreement, shall both become nonexclusive, on ninety (90) days written notice from the FOUNDATION to DU PONT, unless DU PONT shall pay to the FOUNDATION the amount by which such aggregate royalties for such year are less than said sum of dollars, within thirty (30) days after receipt by DU PONT of such notice.

Royalties, as provided for hereinabove, shall be payable only with respect to those operations of DU PONT which are conducted under unexpired patents of the FOUNDATION referred to specifically or otherwise herein and licensed to DU PONT; provided, however, that nothing in this paragraph shall be construed as a contention by DU PONT that its present processes of irradiation of ergosterol and cholesterol are not within the scope of the claims of the patents herein licensed.

7. DU PONT shall not sell activated or irradiated cholesterol and/or its derivatives under any of the licenses herein granted at a higher price than per million U. S. P. X. (Revised 1934) vitamin D units.

8. DU PONT shall keep at its principal office true and particular account of all matters connected with the manufacture and sale of the activated or irradiated products under Sections 2 (A), 2 (B), and 2 (C) hereof and shall furnish to the FOUNDATION within the time specified for the payment of royalties under Section 6 hereof, true and correct statements of the quantity of the products sold. At the request of the FOUNDATION, upon reasonable notice, such records and accounts shall be open to inspection and audit by the FOUNDATION. The records and accounts of DU PONT shall be preserved for at least three years. The FOUNDATION will regard information obtained from such records as confidential.

9. No advertising by DU PONT relating to the products licensed to DU PONT hereunder, shall contain extravagant or unwarranted statements with respect thereto. DU PONT shall not circulate any advertising material (including radio advertising) naming the Steenbock process, the Steenbock patents, the University of Wisconsin, the FOUNDATION, or Dr. Steenbock, without first submitting the same to the FOUNDATION for its approval and receiving said approval.

10. DU PONT shall properly comply with all statutory requirements pertaining to the marking of patented articles.

At the expiration of the term of this contract and all renewals thereof, DU PONT shall not thereafter in its advertising or otherwise, in connection with the sales of its products, use the name of the FOUNDATION or the name of Harry Steenbock.

11. The FOUNDATION shall have the right at any time to inspect and test samples of DU PONT'S irradiated or activated products manufactured under this agreement, and to this end DU PONT agrees to furnish the FOUNDATION, without expense to the FOUNDATION, upon reasonable notice, such reasonable quantity of the products manufactured hereunder, packed or bottled ready for sale, as may be necessary solely for the FOUNDATION to test the potency thereof.

12. The FOUNDATION shall have the right to prosecute suits for infringement of any patents under which DU PONT is operating in accordance with the present agreement, and to defend suits for declaratory judgments concerning such patents, and DU PONT together with all other licensees shall reimburse the FOUNDATION for one-half of the reasonable costs of such litigation both pending and future, incurred during the life of this agreement. DU PONT'S obligation to share in the expense of the afore-mentioned litigation shall be determined in accordance with its proportion of the total royalties received by the FOUNDATION, in the calendar

Digitized by Google

year immediately preceding the termination of any such litigation, from licensees required to share in the expense of such litigation, but in no event shall DU PONT's aggregate liability under the present Section 12 exceed _____ Dollars. It is understood that damages received by the FOUNDATION in any such suit will be applied against the costs of such suit before division of the expenses between the licensees, including DU PONT, as herein provided. DU PONT's contribution toward the expense of any declaratory judgment suit shall be the same proportion as would obtain in an infringement suit prosecuted by the FOUNDATION.

In the event the FOUNDATION fails to institute suit against infringers of patents licensed hereunder it is understood that DU PONT may institute and conduct such suit in the name of the FOUNDATION or in the joint names of DU PONT and the FOUNDATION, after ninety (90) days' notice to the FOUNDATION, and to that end may withhold, from the royalties accruing to the FOUNDATION, one-half of the cost of such suit in excess of the damages and profits recovered by DU PONT therein. Damages and profits received in any such suit may be retained by DU PONT.

If any of the patents herein licensed or any of the claims thereof be declared or decreed invalid or so limited in scope as substantially to affect the licensed monopoly of DU PONT hereunder, by a court of competent jurisdiction, any and all royalty payments due under the present agreement may, at the option of DU PONT, be deposited in escrow with any mutually satisfactory depository, pending any appeal from such decree or mandate and pending final determination as to the validity and scope thereof. If such decree or mandate be appealed within the time allowed by law and finally reversed, so that the licensed monopoly of DU PONT is no longer thereby substantially affected, the amount deposited shall be paid to the FOUNDATION; otherwise it shall be repaid to DU PONT (but DU PONT shall be liable for royalties due to the date of such original decree or mandate) and DU PONT shall not thereafter be liable for any further royalties hereunder. In such event DU PONT shall have the right to cancel this agreement by notice in writing to the FOUNDATION sixty (60) days prior to the effective date of such cancelation.

Furthermore, if the patents licensed to DU PONT hereunder are limited by disclaimer or reissue or otherwise, so as substantially to affect the licensed monopoly of DU PONT hereunder, DU PONT shall be relieved of any obligation to pay royalties hereunder to the FOUNDATION after the effective date of such disclaimer, reissue or other condition so limiting said patents; provided, however, that DU PONT shall pay to the FOUNDATION all royalties accrued up to such date.

13. If any royalties hereinbefore covenanted to be paid shall be in arrears and unpaid for a period of thirty (30) days after the same shall have become payable, or if DU PONT shall permit or allow to be permitted a breach of any of the covenants herein contained on its part to be performed and observed, and shall not remedy such breach within sixty (60) days after written notice is given to it by the FOUNDATION requiring such remedy, or if DU PONT shall become insolvent or commit any act of bankruptcy, or if any order for the compulsory liquidation of DU PONT shall be made by any competent court, the FOUNDATION shall be at liberty in any and every such case, by notice in writing, to determine these licenses, and thereupon the licenses hereby granted, and all rights of DU PONT hereunder, shall forthwith cease and terminate, but without prejudice to the remedy of the FOUNDATION to sue for and recover any royalties then due, and without prejudice to the remedy of either party in respect to any breach of the covenants herein contained.

14. The licenses granted herein shall inure to the benefit of the successors of DU PONT, as well as to the existing or hereafter acquired subsidiaries thereof so long as they remain subsidiaries. A subsidiary, as defined herein, shall be considered a corporation wherein DU PONT owns or controls a majority of the outstanding voting stock. Save for assignments to successors in business, DU PONT shall not assign these licenses or any part of the same without the written consent of the FOUNDATION.

15. It is understood that the FOUNDATION has granted licenses to the following pharmaceutical companies: Abbott Laboratories, Mead-Johnson & Co., Parke-Davis, E. R. Squibb & Sons, and Winthrop Chemical Company, copies of which licenses are hereto attached. The licenses herein granted to DU PONT shall not be construed to prevent such companies from manufacturing and/or selling the activated or irradiated products herein licenses in the fields covered by the licenses so granted to the pharmaceutical companies. Further, notwithstanding the provisions of Section 2 (A) hereof, it is agreed that the FOUNDATION may grant non-exclusive licenses under the patents herein licensed to any or all of the said

Digitized by Google

pharmaceutical companies to manufacture for sale, and to sell, activated or irradiated ergosterol or its derivatives in solutions of medicinally neutral oils containing not less than 10,000 U. S. P. X. (Revised 1934) Vitamin D units per gram and/or activated or irradiated ergosterol or its derivatives with halibut liver oil, such combined product to contain not less than 10,000 U. S. P. X. (Revised 1923) Vitamin D units per gram, for administering the same directly and as such (without having been prior thereto admixed with any other substance) to dogs, cats, and foxes.

16. It is understood that the licenses herein granted to DU PONT are granted subject to the existing license contract dated August 8, 1928, between the FOUNDATION and Standard Brands Inc., as amended, a copy of which agreement with all the amendments thereto is attached hereto and to the existing license contract with The Quaker Oats Company dated February 18, 1927, as amended, a copy of which agreement with all amendments thereto is hereto attached.

17. The FOUNDATION agrees that it will endeavor to treat DU PONT as favorably as any other licensee, and to that end will modify the present agreement in order to correct any injustices which may arise from the grant of licenses to others upon more favorable terms than those set out herein.

18. It is understood that the license herein granted in Section 2 (C) hereof to DU PONT is granted subject to the existing license contract dated July 28, 1934 as amended, between the FOUNDATION and Commander-Larrabee Corporation, a copy of which agreement with said amendment thereto, is attached hereto.

19. The FOUNDATION will use its best efforts to prevent the use in the United States of irradiated or activated products licensed hereunder imported from without the United States except insofar as such importation may be permitted pursuant to the terms of licenses existing on or prior to November 15, 1929, or to DU PONT by this agreement: and the FOUNDATION warrants that it has not granted since November 15, 1929, and it agrees that it will not hereafter grant, any licenses which shall permit the use of such imported products.

20. It is understood that the rights of DU PONT with respect to licensed fields and exclusive nature of said licenses under the present agreement are diminished in no respect whatever as compared with the rights granted Acetol Products, Inc., under the said agreement of November 15, 1929, as amended.

21. The FOUNDATION agrees that it will not hereafter enter into any agreement with a third party by virtue of which it is prevented from granting any licenses to any persons to use products which DU PONT is authorized to make under the FOUNDATION patents hereinabove identified where the result of such licensing will be to discriminate against the use of DU PONT's said authorized products.

22. The FOUNDATION represents and warrants that it has full authority to grant the licenses herein granted to DU PONT.

23. The present agreement embodies all the mutually satisfactory terms entered into by and between the parties hereto, with respect to the subject matter hereof, up to and including the date first hereinabove set forth.

IN WITNESS WHEREOF, the parties hereto have had this agreement executed by their duly authorized representatives and sealed with their respective corporate seals, as of the day and year first hereinabove set forth.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By T. E. BRITTINGHAM, JR., *Vice President.*

Attest: L. M. HANKS.

E. I. DU PONT DE NEMOURS & COMPANY,
By N. T. HARRINGTON, *Vice President.*

Attest: M. D. FISHER, *Asst. Secretary.*

I, HARRY STEENBOCK, in consideration of being discharged from all obligations arising under that certain agreement of November 15, 1929, between the FOUNDATION, Acetol Products, Inc., and myself, as amended, do hereby consent to the cancelation as above provided of said agreement, as amended, as of November 15, 1935.

HARRY STEENBOCK.

Witness: HENRY T. SCOTT.

Digitized by Google

This agreement made this 2nd day of February 1935, between the Wisconsin Alumni Research Foundation, A Wisconsin Corporation not for pecuniary profit (hereinafter called the Licensor) and Ayerst, McKenna & Harrison (U. S.) Ltd., a New York Corporation of Rouses Point, New York (hereinafter called the Licensee),

WITNESSETH:

That, Whereas, the Licensor is a corporation organized and existing under the laws of the State of Wisconsin, for the purpose, among others, of promoting, encouraging, and aiding scientific research at the University of Wisconsin, and providing funds therefor; and

Whereas, the Licensor is the owner of United States Letters Patent No. 1,680,818, issued upon the application of Harry Steenbock, upon Antirachitic Products and Process; and

Whereas the Licensee has negotiated with the Licensor, and now desires to secure a license under said patent for the activation and sale of a food product known as Glucose D, being a compound of Glucose and irradiated ergosterol; It Is Agreed:

I

The Licensor grants to the Licensee a license under United States Letters Patent No. 1,680,818 to purchase and use irradiated ergosterol in and for the manufacture of its product now known and sold as Glucose D, and to sell said Glucose D in the territory hereinafter defined. All irradiated ergosterol that may be used under this license shall be purchased by the Licensee from other licensees of the Licensor licensed to sell such product in the United States. The Licensee shall have no right itself to irradiate ergosterol with ultraviolet rays, nor shall it have the right to resell or otherwise dispose of irradiated ergosterol purchased under this license except as incorporated in said product, Glucose D. The word "activate" as used herein means the enhancement of Vitamin D potency of the Licensee's product Glucose D by the addition thereto of irradiated ergosterol.

All Glucose D manufactured and sold under this license shall contain a Vitamin D potency not in excess of one-half the potency of standard cod liver oil.

It is expressly understood that the licensed product, Glucose D, shall only be sold by the Licensee as a food product, and not as a pharmaceutical product or a drug product. It is further understood that the Licensee shall not, during the life of this license, sell any product under the name Glucose D which product is not a compound of glucose and irradiated ergosterol.

II

The Licensor shall without charge give to the Licensee such assistance, data, and information bearing upon the invention and improvements as shall enable Licensee to best work the invention to the full extent known to the Licensor. Any improvements made or acquired by the Licensor shall be forthwith communicated to the Licensee, whether patented or not, and may be used by the Licensee without payment of further or additional royalty as specified hereinafter.

III

The rights granted to the Licensee under this license to purchase and use irradiated ergosterol in the manufacture of Glucose D shall be nonexclusive and shall extend throughout the United States of America, including territories and possessions thereof, so long as the latter remain under the political jurisdiction of the United States. The rights granted to the Licensee under this license to sell Glucose D extend throughout the world save for Great Britain (including North Ireland and the Isle of Man) and Germany. Within Great Britain, (including North Ireland and the Isle of Man) and Germany, the Licensee may not in any manner directly or indirectly practice the invention of said patent or improvements thereon.

IV

The duration of this license shall be for that length of time measured by the life of United States Letters Patent No. 1,680,818.

Digitized by Google

V

The Licensee agrees to pay to the Licensor within thirty (30) days from the end of each three calendar months' period, while this license agreement is in effect, a sum equivalent to percent of the net sales price of Glucose D sold by it during the preceding three calendar months. The Licensee agrees to pay to the Licensor on the termination of this license by lapse of time or otherwise percent of the net sales price (estimated upon the previous year's business) of the Glucose D manufactured under this license, but not then sold—said sum to be paid within three months after the date of the termination of this license.

The term "Net Sales" means listed selling price to the retailer or jobber, as the case may be, minus discounts to the trade and allowance for returned goods.

VI

The Licensee shall keep at its principal offices true and particular account of all matters connected with the manufacture and sale of Glucose D, and shall furnish the Licensor within the times limited in the preceding paragraph a true and correct statement of the quantity sold, At the request of the Licensor, upon reasonable notice, such records and accounts shall be open to inspection and audit by the Licensor or its agents. The records and accounts of the Licensee shall be preserved for at least two years.

VII

No literature or advertising shall contain extravagant or unwarranted statements. The Licensees shall not in such advertising or literature, without the approval of the Licensor, circulate any material relating to the Steenbock process, the Steenbock patents, the University of Wisconsin, or the Licensor, and such advertising and literature shall first be submitted to the Licensor for its approval. The Licensee shall advertise the licensed product only in those publications which primarily serve the medical profession.

VIII

The Licensee shall properly comply with all statutory requirements pertaining to the marketing of patented articles.

IX

The Licensor shall have the right at any time on reasonable notice to inspect and test samples of the Licensee's products and to this end the Licensee agrees to furnish such quantity of its products as packed ready for sale as may be necessary for the Licensor to test the potency thereof.

X

The Licensee agrees not to furnish free the products covered in this license except for clinical and research purposes only; and at the end of each month the Licensor is to be furnished a list of the names and addresses of those to whom such product is given during that month, together with the amount furnished.

XI

The Licensee shall not assign this license or any part thereof without the written consent of the Licensor first obtained.

XII

The Licensee shall not during the ~~existence~~ of this license dispute the validity of the Licensor's patents under which this license is given.

XIII

If any royalties hereinbefore covenanted to be paid shall be in arrears for a period of thirty days, or if the Licensee permits or allows a breach of any of the covenants herein on their part to be performed and observed, and remedy shall not be made within sixty days after written notice by the Licensor requiring such remedy, the Licensor shall be at liberty in any and every such case by notice in

Digitized by Google

writing to determine this license, and thereupon all rights of the Licensee hereunder shall forthwith cease and terminate, but without prejudice to the remedy or right of the licensor to sue for and recover any royalties then due, and without prejudice to right of either party in respect of any breach of the covenants herein.

XIV

The Licensor shall have the right to prosecute suits for infringement of the Letters Patent by virtue of which the Licensee is operating, and the Licensee, together with all other Licensees under said patent, shall be liable for one-half of the reasonable costs of such litigation.

The Licensor shall have the right, and it shall be its duty, to apportion equitably such one-half of the expenses among other licensees bound by their contracts to bear a portion of such expenses, written notice of which apportionment shall be promptly given by the Licensor to the Licensee, and the Licensee shall not be liable for any amount or amounts so apportioned to any such other Licensee or Licensees.

In the event that suit is brought against the Licensee, charging that acts performed under this license constitute infringement of a United States Letters Patent, the Licensee may defend such suit and deduct the reasonable costs thereof from the royalties accruing under this contract. The Licensor shall not be liable for any sum beyond the amount of such accruing royalties. The Licensor may assist in the defense of any such litigation if it so elects and it shall render such reasonable assistance as the Licensee may require.

XV

The Licensee may, during but not beyond the life of this license, use that symbol, label or design adopted by the Licensor to identify products made and sold under the Steenbock patented process.

XVI

This license is granted subject to, and the Licensee takes this license with notice of the terms and provisions of and the rights under the following existing license agreements to which the Licensor is a party, together with all modifications of said license agreements now in force and in operation, and this license shall not be construed as in any way directly or indirectly covering the fields granted by said licenses or any of them:

Abbott Laboratories
E. R. Squibb & Sons
Winthrop Chemical Company
Mead Johnson & Company
Parke-Davis & Company

all of which are of identical terms.

Witness our hands and seals, and the delivery of this contract, on the date first written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

TIMOTHY BROWN, *Asst. Secretary.*

AYERST, MCKENNA & HARRISON (U. S.), LTD.,
By H. MCPHERSON, *President.*

Attest:

W. HARRISON, *Secretary.*

THIS AGREEMENT, Made this 18th day of February 1927, between WISCONSIN ALUMNI RESEARCH FOUNDATION, a corporation not for pecuniary profit, organized and existing under and by virtue of the laws of the State of Wisconsin, with an office in Madison, Dane County, Wisconsin, hereafter called the "Licensor," and THE QUAKER OATS COMPANY, a corporation organized and existing under and by virtue of the laws of the State of New Jersey, with principal office at Chicago, Cook County, Illinois, hereinafter called the "Licensee," WITNESSETH: That,

Whereas the Licensor is a corporation organized under Chapter 180, Wisconsin Statutes, to promote, encourage, and aid scientific investigation and research at the University of Wisconsin by the faculty, staff, alumni, and students thereof and

Digitized by Google

those associated therewith, and to provide or assist in providing the means and machinery by which their scientific discoveries, inventions, and processes may be developed and applied and patented and the public and commercial uses thereof determined, and by which such utilization or disposition may be made of such discoveries, invention, or processes and patent rights or interests therein, as may tend to stimulate and promote and provide funds for further scientific investigation and research within said university or colleges or departments thereof; and,

Whereas, the Licensor is the owner of an invention upon which application for patent Serial No. 723,171, has been filed in the Patent Office of the United States, by Harry Steenbock, relating to a method of providing antirachitic product of edible character, such as foods and medicines, and to the products obtained by such method of treatment; and,

Whereas, it is necessary to design and build machines and equipment for the practice of the said invention, and whereas so to do may require the expenditure of considerable sums of money to provide the means for practicing the said invention in a commercially advantageous way:

IT IS AGREED:

1. The Licensee agrees faithfully and with reasonable diligence to undertake the manufacture, or to procure the manufacture of machinery and equipment which it shall find practical, necessary and convenient for the best use of the said invention in giving anti-rachitic qualities to the products manufactured and sold by the Licensee—that is to say, rolled oats and oatmeal, puffed rice, puffed wheat and other puffed products, cornmeal and corn flour, pancake flour, macaroni, stock and poultry feeds and other cereal products except wheat and rye flours and except cereal oils and save for breakfast foods except crackers, biscuits, cookies, breads and other similar products of wheat and rye flours, and to pay all the expenses incurred in so doing.

2. The Licensee agrees to keep the Licensor at all times informed of the status of the undertaking by the Licensee in the preceding paragraph made, to apprise the Licensor of discoveries and inventions, if any, in relation to said machinery and equipment in connection with the manufacture and operation thereof and experiments thereon, and also in respect to any methods or inventions used in or relating to said undertaking, thereby granting to the Licensor and its Licensees full and free license to use such methods and inventions in respect to edible foods other than products of the Licensee mentioned in paragraph 1 hereof, and also as to said foods mentioned in paragraph 1 after the exclusive right hereinafter granted by the Licensor to the Licensee shall have expired.

3. The Licensor grants to the Licensee a license to use the invention described in said application No. 723,171, under any patent or patents that shall be hereafter granted on the subject matter of said application, and under any improvements thereon made or acquired by the Licensor in the manufacture and sale of the products described in paragraph 1.

4. The Licensee agrees to pay to the Licensor the sum of Dollars forthwith, and the further sum of Dollars on the first day of February of each year, beginning February 1, 1928, until the Licensee shall manufacture or procure the manufacture of machinery and equipment for the use of said invention, and shall use said invention commercially in connection with the manufacture and sale of one of the products described in paragraph 1 hereof. The use of said invention in connection with the manufacture or sale of one or more of said products in an experimental way shall not be considered a commercial use of said invention. On the first day of February following the commercial use of said invention, the Licensee shall pay to the Licensor the sum of Dollars, and on the first day of February of the year following the sum of Dollars, and on the first day of February of the next year and on the first day of February of each and every year thereafter, during the life or lives of the basic patent or patents which shall be granted under said application for patent described in paragraph 1 hereof, the Licensee shall pay to the Licensor the sum of Dollars.

5. This license shall be exclusive to the Licensee, as to the licensee's products mentioned in paragraph 1, during the experimental period and for ten (10) years after the Licensee shall commence the use of said invention commercially. The purpose of the Licensor in giving the Licensee a limited exclusive grant is to afford the Licensee full opportunity to make itself whole upon the moneys expended by it under paragraph 1 in making commercial the inventions that are the subject matter of this contract, and also to make itself whole under the provisions of paragraph 11 herein following.

Digitized by Google

6. The licensee shall, in suitable manner, affix upon the individual packages in which it sells its goods, made under this license, a legend to the effect that they are made under the Steenbock Process, and the Licensor shall have the right, insofar as it can be secured or can be granted by the Licensee, to use and to grant to others the right to use the said legend or similar legends, and any trade-mark rights that may be secured thereunder or in relation thereto, whether registered or otherwise, as to all products not mentioned in paragraph 1 hereof, and as to those products mentioned in paragraph 1 after the Licensee's exclusive right has terminated hereunder.

7. The Licensee shall, in a suitable manner, affix upon the individual packages in which it sells its goods made under this license agreement, the word "Patented," and the date of the issuance of the patent or patents covering the invention or inventions that are the subject matter of this contract, so soon as patents thereon shall be issued.

8. The grant of the Licensor to the Licensee hereunder shall also estend to any rights in foreign countries in respect to the inventions which are the subject matter of this contract and patents secured thereon, and the licensee agrees to pay therefor a royalty which shall be determined by taking that fraction of the royalty stipulated to be paid by the Licensee for United States rights in which the numerator shall be the amount of the gross sales of the Licensee in said foreign country of products manufactured under said invention and in which the demoninator shall be the gross amount of sales of the Licensee in the United States of such products. The Licensor will, upon request, execute and deliver to the Licensee any and all documents necessary to secure to the Licensee such foreign rights.

9. The Licensee shall not in its regular advertising circulate any advertising material referring to the Steenbock Process, the Steenbock patents, or to the University of Wisconsin, without first submitting said advertising material to the Licensor for its approval. This shall not apply to usual publicity material as distinguished from advertising material.

10. If during the continuance of this license the inventor Steenbock shall make any further improvements in the said invention or in the mode of using the same, rights in which shall be secured by the Licensor, or should the Licensor otherwise become the owner of any such improvements, then and in every such case the Licensor shall communicate the improvement to the Licensee, and the license hereby granted shall apply thereto without the payment of any further royalty than that hereinbefore in this contract stipulated.

11. In case any Letters Patent, under which a license is hereby granted, shall be infringed, the Licensee shall notify the Licensor thereof immediately, and in such case the Licensee may, at its option, take the necessary proceedings effectually to protect the said patent or patents, and to that end use the name of the Licensor. If the Licensee shall take such proceedings, the entire reasonable cost thereof shall be equally divided between the Licensor and the Licensee. In such case, the Licensee shall pay such cost and shall deduct one-half of the previous year's expense from the succeeding year's royalty. If the Licensee shall elect not to take such proceedings, then it shall notify the Licensor, and the Licensor, at its option, may take such proceedings at its own expense. If any profits, damages, or royalties are collected in any suit brought by the Licensee, the amount thereof, less the cost of litigation shall be divided equally between the Licensor and the Licensee.

12. The Licensee shall not at any time dispute the validity of the Licensor's patents. The Licensee shall not assign this license, or any part of the same, or grant any sublicense without the written consent of the Licensor, except that the Licensee, without such consent, may sell or assign this license in connection with the sale or assignment of substantially its entire business, and it may grant sublicenses to subsidiaries of which it shall own substantially all the stock without the payment of additional royalties.

13. It is further provided that if royalties, or any part thereof, shall at any time be in arrears for ninety (90) days after the same shall become due, or in case of default in performing any of the agreements herein contained, then, and in any such case, it shall be lawful for the Licensor by notice in writing given to the Licensee, or left at its usual or last place of business, to revoke this license, which shall thereupon become void without prejudice to any right of action or remedy that the Licensor shall have for the recovery of any moneys then due to it hereunder, or in respect to any antecedent breach of any agreement herein contained.

14. The Licensee may terminate this agreement at any time by giving to the Licensor notice in writing, mailed to the Licensor ninety (90) days prior to the

Digitized by Google

date when such termination shall take effect. Such termination shall not affect any right of action which exists at the time of such termination.

In witness whereof, the parties hereto have caused this agreement to be duly executed the day and year first above mentioned.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

L. M. HANKS, *Secretary.*

THE QUAKER OATS COMPANY,
By JOHN STUART, *President.*

Attest:

WALTER L. TEMPLETON, *Secretary.*

WISCONSIN ALUMNI RESEARCH FOUNDATION

CHICAGO, ILL., *October 31, 1930.*

The QUAKER OATS Co.,
Chicago, Ill.

GENTLEMEN: The board of trustees of Wisconsin Alumni Research Foundation has given consideration to the question of reducing the royalty for the year 1931 under the agreement between you and the Foundation, and is satisfied to make such reduction. This letter, if accepted by you, will constitute an amendment of our agreement of February 18, 1927.

We understand that you have expended a very large amount of money in an effort to make profitable use of the Steenbock process, but so far have not succeeded. When we entered into the original agreement, it was contemplated by both of us that you would use the Steenbock process on one of your major products, but we understand you have found this impracticable and are using it only on Muffets and Farina, two of your minor products, and that under the circumstances you feel that you cannot proceed under the contract and will be required to cancel unless some adjustment of the royalty is made.

Our board fully appreciates the situation in which you find yourselves and wishes to cooperate in your endeavor to make a larger use of the process. To that end we agree that you shall pay us a royalty of instead of for the year beginning February 1, 1931.

We understand that you have been selling irradiated products in Canada and Great Britain since sometime in 1928, and that no accounting has been made for royalties. You agree to pay us a royalty for this business of not less than including the year ending February 1, 1931. If it should develop that your sales in Canada and Great Britain, for the period in question, with relation to the United States business, would produce more than on the basis of a United States royalty of per each of these years, then you will pay us such additional sum. With reference to foreign business, for the year beginning February 1, 1931, the terms of the contract will apply upon the basis of a royalty of for the United States. This adjustment for past years and for the year 1931 covers any liability on the part of Quaker Oats, Limited.

Except as modified by this letter, our agreement shall remain in full force.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Accepted:

THE QUAKER OATS Co.,
By JOHN STUART, *President.*

MADISON, *December 9, 1930.*

QUAKER OATS Co.,
Chicago, Ill.

(Attention Mr. W. D. McKenzie.)

DEAR SIR: Confirming our conversation of a few days ago I may say that the Foundation has given consideration to your proposal which we understand to be as follows:

1. An experimental period of a year in which to try out the effect of irradiation on corn flakes for Canadian distribution, and rolled oats for distribution in Great Britain, Irish Free State, Germany, and other foreign countries except Canada.

Digitized by Google

2. That the royalties which will be paid the Foundation for such experimental treatment of products for foreign sale will be approximately , which, added to the royalties due from the present foreign business will amount to the sum of for the year 1931, said amount payable on February 1.

3. That at the end of 1931 the Quaker Oats Co. and the Foundation will on the basis of the results then available redetermine a fair and equitable basis for foreign royalties in the future.

We are equally anxious with you to see that these experiments are tried out under as favorable conditions as possible and to make these arrangements practicable, the trustees of the Foundation have authorized me to approve of the proposal made. If you will attach your assent to the duplicate copy of this letter herewith enclosed and return same to me, we will consider this as modifying the license contract dated February 18, 1927.

Trusting that your experimental trials may prove successful, we are

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
HARRY L. RUSSELL, *Director.*

Accepted by Quaker Oats Co.

JOHN STUART.

SUPPLEMENTAL AGREEMENT

Supplemental Agreement made this 11th day of January 1932, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin Corporation not for pecuniary profit (hereinafter called the Licensor) and THE QUAKER OATS COMPANY, a corporation organized and existing under and by virtue of the laws of the State of New Jersey, with its principal office in Chicago, Cook County, Illinois (hereinafter called the Licensee),

WITNESSETH

That, Whereas, the Licensor and Licensee have heretofore, on the 18th day of February 1927, entered into a certain license agreement, whereby the Licensor has granted to the Licensee a license for the manufacture and sale of certain irradiated cereal products, and the Licensee has agreed to make certain royalty payments as therein specified; and

Whereas, the Licensor and Licensee now desire to modify for a period of three years, beginning February 1, 1932, the requirements of said contract of February 18, 1927, relating to royalty payments, it is agreed as follows:

The contract dated February 18, 1927, between the parties hereto, as heretofore amended, is hereby modified as follows:

(a) Instead of the royalties provided for in the contract, the Licensee shall pay to the Licensor for a period of three years, beginning February 1, 1932 and ending January 31, 1935, the sum of per year, payable on or before February 1st of each year, such payment to constitute full payment for such period of the Licensee's royalty obligations under said contract for both United States and foreign business.

(b) The Licensee shall have no right to terminate said contract of February 18, 1927, as amended, prior to January 31, 1935. The Licensee, however, may terminate the agreement on January 31, 1935 by giving the notice provided for in said contract.

(c) In all other respects said contract of February 18, 1927, as heretofore amended, shall remain in full force and effect.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

L. M. HANKS, *Secretary.*

THE QUAKER OATS COMPANY,
By JOHN STUART, *President.*

Attest:

WALTER L. TEMPLETON, *Secretary.*

Digitized by Google

THE QUAKER OATS COMPANY,
Chicago, October 17, 1934.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wisconsin.

(Attention Dr. H. L. Russell, Director.)

GENTLEMEN: The following covers the arrangement between the Wisconsin Alumni Research Foundation and the Quaker Oats Company for the coming year:

Instead of the royalties provided for in our contract dated February 18, 1927, we will pay to the Foundation for a period of one year, beginning February 1, 1935, and ending January 31, 1936, the sum of , payable on or before February 1, 1935, such payment to constitute full payment for such period of our royalty obligations under said contract for both United States and foreign business.

Upon the acceptance by the Foundation of this letter it will constitute an amendment to our agreement of February 18, 1927.

Very truly yours,

THE QUAKER OATS COMPANY,
By JOHN STUART, *President.*

Accepted:

WISCONSIN ALUMNI RESEARCH FOUNDATION,
H. L. RUSSELL, *Director.*

THE QUAKER OATS COMPANY,
Chicago, October 10, 1935.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wisconsin.

(Attention Dr. H. L. Russell, Director.)

GENTLEMEN: The following covers the arrangement between the Wisconsin Alumni Research Foundation and The Quaker Oats Company for the coming year:

Instead of the royalties provided for in our contract dated February 18, 1927, we will pay to the Foundation for a period of one year, beginning February 1, 1936 and ending January 31, 1937, the sum of payable on or before February 1, 1936, such payment to constitute full payment for such period of our royalty obligations under said contract for both United States and foreign business.

Upon the acceptance by the Foundation of this letter it will constitute an amendment to our agreement of February 18, 1927.

Very truly yours,

THE QUAKER OATS COMPANY,
By JOHN STUART, *President.*

Accepted: Oct. 25, 1935.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By H. L. RUSSELL, *Director.*

THE QUAKER OATS COMPANY,
Chicago, December 23, 1936.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis.

(Attention Dr. H. L. Russell, Director.)

GENTLEMEN: The following covers the arrangement between the Wisconsin Alumni Research Foundation and The Quaker Oats Company for the coming year:

Instead of the royalties provided for in our contract dated February 18, 1927, we will pay to the Foundation for a period of one year, beginning February 1, 1937 and ending January 31, 1938, the sum of payable on or before February 1, 1937, such payment to constitute full payment for such period of our royalty obligations under said contract for both United States and foreign business.

Upon the acceptance by the Foundation of this letter, it will constitute an amendment to our agreement of February 18, 1927.

We understand you have under consideration negotiations which may require some modification of our agreement. We will, of course, be glad to discuss any

Digitized by Google

such modification at any time, and will go as far as we reasonably can to meet your requirements.

Very truly yours,

THE QUAKER OATS COMPANY,
By R. DOUGLAS STUART, *Vice President.*

Accepted:

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By H. L. RUSSELL, *Director.*

THE QUAKER OATS COMPANY,
Chicago, October 5, 1937.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wisconsin.

(Attention Dr. H. L. Russell, Director.)

GENTLEMEN: The following covers the arrangement between the Wisconsin Alumni Research Foundation and The Quaker Oats Company for the coming year:

Instead of the royalties provided for in our contract dated February 18, 1927, we will pay to the Foundation for a period of one year, beginning February 1, 1938, and ending January 31, 1939, the sum of payable on or before February 1, 1938, such payment to constitute full payment for such period of our royalty obligations under said contract for both United States and foreign business.

Upon the acceptance by the Foundation of this letter, it will constitute an amendment to our agreement of February 18, 1927.

We understand you have under consideration negotiations which may require some modification of our agreement. We will, of course, be glad to discuss any such modification at any time, and will go as far as we reasonably can to meet your requirements.

Very truly yours,

THE QUAKER OATS COMPANY,
By R. DOUGLAS STUART,
First Vice President.

Accepted:

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By H. L. RUSSELL, *Director.*

THE QUAKER OATS COMPANY,
Chicago, November 1, 1938.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wisconsin.

(Attention Dr. H. L. Russell, Director.)

GENTLEMEN: The following covers the arrangement between the Wisconsin Alumni Research Foundation and The Quaker Oats Company for the coming year:

Instead of the royalties provided for in our contract dated February 18, 1927, we will pay to the Foundation for a period of one year, beginning February 1, 1939, and ending January 31, 1940, the sum of payable on or before February 1, 1939, such payment to constitute full payment for such period of our royalty obligations under said contract for both United States and foreign business.

Upon the acceptance by the Foundation of this letter, it will constitute an amendment to our agreement of February 18, 1927.

We understand you have under consideration negotiations which may require some modification of our agreement. We will, of course, be glad to discuss any such modification at any time, and will go as far as we reasonably can to meet your requirements.

Very truly yours,

THE QUAKER OATS COMPANY,
By R. DOUGLAS STUART,
First Vice President.

Accepted:

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By H. L. RUSSELL, *Director.*

Digitized by Google

SUPPLEMENTAL AGREEMENT made this First day of December, 1939, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation, not for private profit (hereinafter called the "Licensor"), and THE QUAKER OATS COMPANY, a corporation organized and existing under and by virtue of the laws of the state of New Jersey, with its principal office in Chicago, Cook County, Illinois, (hereinafter called the "Licensee"),

WITNESSETH:

WHEREAS the Licensor and the Licensee heretofore on February 18th, 1927, executed a certain license agreement whereby the Licensor granted to the Licensee a license for the manufacture and sale of certain irradiated cereal products and the Licensee agreed to make certain royalty payments as therein specified; and

Whereas by various supplemental agreements and letter agreements, the said agreement of February 18th, 1927, has been amended from time to time; and

Whereas, the Licensor and Licensee now desire to amend certain sections of said agreement of February 18th, 1927, it is agreed as follows:

I

Section 4 of said license agreement of February 18th, 1927, is hereby amended to read as follows:

"4. The Licensee agrees to pay to the Licensor the sum of on the first day of February of each year, beginning February 1, 1940, during the life of this license."

II

Section 5 of said license agreement of February 18th, 1927, is hereby amended to read as follows:

"5. This license shall be exclusive to the Licensee as to rolled oats and oatmeal during the life of United States Letters Patent No. 1,680,818, and shall be non-exclusive as to all of the other products of the Licensee licensed in Section 1 hereof."

III

Section 6 of said license agreement of February 18th, 1927, is hereby amended to read as follows:

"6. The Licensee shall in suitable manner affix upon the individual packages in which it sells its goods made under this license a legend to the effect that they are made under the Steenbock Process, and the Licensor shall have the right insofar as it can be secured or can be granted by the Licensee to use and to grant to others the right to use the said legend or similar legends and any trade-mark rights that may be secured thereunder or in relation thereto, whether registered or otherwise, as to all products except rolled oats and oatmeal, and as to rolled oats and oatmeal, after the Licensee's exclusive right has terminated hereunder."

IV

Section 8 of said license agreement of February 18th, 1927, is hereby amended to read as follows:

"8. The grant of the Licensor to the Licensee hereunder shall also extend to any rights in foreign countries in respect to the inventions which are the subject matter of this contract and patents secured thereon. The Licensor will upon request execute and deliver to the Licensee any and all documents necessary to secure to the Licensee such foreign rights."

V

The Supplemental Agreement between the parties hereto, dated the 22nd day of October, 1929, is hereby cancelled and terminated.

VI

In all other respects said license agreement of February 18th, 1927, as heretofore amended, shall remain in full force and effect.

IN WITNESS WHEREOF the parties hereto have had this agreement executed by their duly authorized representatives and sealed with their respective corporate seals as of the day and year first hereinabove set forth.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*
Attest: L. M. HANKS, *Secretary.*

THE QUAKER OATS COMPANY
By JOHN STUART, *President.*
Attest: ROBERT E. COON, *Assistant Secretary.*

Digitized by Google

THIS AGREEMENT, made this first day of January 1930, between the Wisconsin Alumni Research Foundation, a corporation not for pecuniary profit, organized and existing under and by virtue of the laws of the State of Wisconsin with an office in Madison, Dane County, Wisconsin, hereinafter called "The Foundation," and The Dry Milk Company, Inc., a corporation existing under and by virtue of the laws of the State of Delaware, with its principal office in New York, New York County, New York, hereinafter called the "Milk Co."

WITNESSETH: Whereas the Foundation is a corporation organized under Chapter 180 of Wisconsin Statutes to promote, encourage, and aid scientific investigation and research at the University of Wisconsin by the faculty, staff, alumni, and students thereof and those associated therewith, and to provide or assist in providing the means and machinery whereby their scientific discoveries, inventions, and processes may be developed and applied and patented and the public, commercial, and humanitarian uses thereof determined and by which such utilization or disposition may be made of such discoveries, invention, or processes and patent rights or interest therein, as may tend to stimulate and promote and provide funds for further scientific investigation and research within said University or colleges or departments thereof; and

Whereas the Foundation is the owner of United States Letters Patent No. 1,680,818 issued August 14, 1928, upon the application of Harry Steenbock upon Antirachitic Products and Processes, and

Whereas the Milk Company has negotiated with the Foundation and now desires to secure a license under said patent for the manufacture and sale of Dryco;

It is Agreed:

1. The Foundation grants to the Milk Company a nonexclusive license to use the inventions described in said patent, and improvements thereon acquired by the Foundation to manufacture Dryco and to sell such product in any part of the world except Great Britain (including North Ireland, Isle of Man) and Germany. The Milk Company shall have the right under this license to increase the antirachitic activity of Dryco by the use of irradiated ergosterol or any other means described in the Steenbock patent on Vitamin D, but any ergosterol so used shall be purchased from the Fleischmann Company (Standard Brands, Inc.) or the Acetol Products Company, so long as obtainable from them. The Licensee shall not increase the activity of Dryco so as to contain a Vitamin D potency exceeding one rat unit per ten grams as defined in the appended supplement to this Agreement.

2. Unless otherwise terminated as hereinafter provided, the duration of this license shall be for the life of United States Letters Patent No. 1,680,818 issued August 14, 1928, but both parties hereto shall have the right to continue to use all improvements which they have taken a license to use hereunder during the life of said letters patent throughout the remaining term of any letters patent covering such improvement.

3. The Milk Company agrees to pay to the Foundation within thirty (30) days from the end of each three calendar month period while this license agreement is in effect per pound for all Dryco manufactured and antirachitically activated hereunder by the said Milk Co. within such period. The Milk Co. guarantees that the royalty payable to the Licensor under the terms of this section will not be less than for each year of this license.

It is recognized that the rate of royalty specified in this license agreement is a preferential rate which is agreed to by the licensor only in view of the anticipated value of the Supplee patent applications.

4. The Milk Co. shall keep, at its principal office, a true record of the manufacture of Dryco under this license and shall furnish to the Foundation, within the thirty days mentioned in Paragraph No. 3, a true and correct statement of the quantities of Dryco manufactured during the immediately preceding royalty period. At the request of the Foundation, upon reasonable notice, such records shall be open to inspection and audit by the Foundation or its agent. The records and accounts shall be preserved for at least two years. The Milk Co. shall not be obliged to disclose the names of its customers.

5. The Milk Co. shall properly comply with all statutory requirements pertaining to the marking of patented articles.

The Milk Co. agrees that upon reasonable notice from the Foundation, it will place upon all its sales packages, and in all its advertising matter, a symbol or design, selected by the Foundation, when and wherever consistent with its business interests, showing that the product is manufactured and sold by virtue of a license from the Wisconsin Alumni Research Foundation.

Digitized by Google

At the expiration of the license term of this contract, or any extension thereof, the Milk Co. shall not thereafter in its advertising or otherwise, in connection with the sales of its products, use the name of the Foundation, the name of Dr. Steenbock, or the design or symbol heretofore mentioned in this section.

6. The Milk Co. agrees to apprise the Foundation promptly of all discoveries and inventions it has or may hereafter have during the life of this agreement, relating to equipment or processes for imparting antirachitic qualities to milk and its products, on which it may have made patent application (including the Supplee applications), hereby granting to the Foundation and its other or future licensees full license throughout the world as to all suitable products to use such discoveries and inventions subject to the conditions hereinafter named.

The Milk Co. shall diligently prosecute the Supplee patent applications (however named) wherever filed and shall bear all expenses connected therewith and in the event that any such claims are disallowed by the Examiner wherever filed, the Milk Co. shall so inform the Licensor so that all measures may be taken to secure favorable action. In granting licenses under the Milk Co.'s patent or patents, the number and date of issue thereof shall be specified in each license granted. And the Licensor agrees to pay to the Milk Co. % of all moneys it receives as license royalty upon said patents. The Milk Co. shall be obligated to maintain and pay taxes on such patents in foreign countries so long as its share of the royalties thereon is at least equal to the total of such expense involved.

7. No advertising shall contain extravagant or unwarranted statements. The Milk Co. shall not, in its advertising, without the approval of the Foundation, circulate any advertising materali relating to the Steenbock process, the Steenbock patents, the Universiry of Wisconsin, the Licensor or Dr. Steenbock; and such advertising material shall first be submitted to the Foundation for its approval.

8. If during the continuance of this license the inventor Steenbock, or any other inventor, shall make any further improvements in the said invention or in the mode of using the same in connection with Dryco or shall make any other inventions relating to methods of imparting antirachitic qualities to Dryco and means thereto, rights in which shall be secured by the Foundation, or should the Foundation otherwise become the owner of Licensee (with right to sub-license others) of any improvements and inventions relating to methods of imparting antirachitic qualities to Dryco and means thereto, and then and in every such case the Foundation shall promptly communicate the improvement and/or invention to the Milk Co. and, at the written request of the Milk Co., shall grant a license to the Milk Co. under any such improvement, and/or invention without the payment of any further royalty by the Milk Co. than that hereinbefore in this agreement stipulated.

9. The Foundation shall have the right to prosecute suits for infringement of any of the Letters Patent by virtue of which the Milk Co. is operating, and the Milk Co., together with all other Licensees, shall be liable for one-half of the reasonable costs of such litigation.

The Foundation shall have the right, and it shall be its duty, to apportion equitably such one-half of the expenses among other Licensees bound by their contracts to bear a proportion of such expenses.

10. The Milk Co. shall not, while this agreement is in force, dispute, in any suit brought against it for violation of any of the provisions of this agreement, the validity of the Foundation's patents under which it has accepted and may then hold a license. The Milk Co. may at any time surrender or refuse to accept a license under any patent or claim thereof other than Steenbock's patent No. 1,680,818 without surrendering any other rights which it may then hold under this agreement.

11. The Milk Co. shall not assign this license, or any part of the same, except in connection with the transfer or sale of its entire business, without the written consent of the Foundation; and shall not grant sublicenses.

12. It is further provided that if royalties or any part thereof shall at any time be in arrears, or in case of default by the Milk Co. in performing any of the agreements herein contained, the Foundation shall notify the Milk Co. of such arrears, or of such default. Such notification shall be in writing, sent by registered mail to the Milk Co., addressed to its usual or last place of business. If within sixty (60) days thereafter the Milk Co. shall not have made up the arrears of royalty or repaired the default, then, and in any such case, it shall be lawful for the Foundation to revoke this license without prejudice to any right of action or remedy that the Foundation shall have or for the recovery of any moneys then due to it hereunder, or in respect to any antecedent breach of any agreement herein contained.

Digitized by Google

13. The Milk Co. may terminate this agreement at any time after one year from the date hereof by giving the Foundation notice in writing, by registered mail, mailed to the Foundation ninety (90) days prior to the date when such termination shall take effect Such termination shall not affect any right of action which may exist at the time of such termination nor the provisions of Section II hereof, and shall not terminate the right of the Foundation, and of such of its licensees and sublicensees as may on the date on which the termination takes effect, hold written licenses from the Foundation or from its licensees, as the case may be, under any patent rights of the Milk Co., in accordance with the provisions of Section 6 hereof, from continuing to use the inventions specifically referred to in such written licenses; nor shall the Milk Co. be barred from thereafter, and with respect to any use after such termination, making any and all defenses in any suit under the Foundation's patents hereinabove referred to as if this license agreement has never been made.

14. This license is expressly subject to provisions contained in Sections I, II, III, IV, and V of the contract dated August 8, 1928, between the Wisconsin Alumni Research Foundation and the Fleischmann Company.

In witness whereof, the parties hereto have caused this agreement to be duly executed the day and year first above mentioned.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*
Attest:
(Signed) L. M. HANKS, *Secretary.*
THE DRY MILK COMPANY, INC.,
By (Signed) WILLIAM CALLAN, *President.*
Attest:
(Signed) J. MILLER, *Assistant Secretary.*

SUPPLEMENT

DEFINITION OF A RAT UNIT

A rat unit of vitamin D is that amount of vitamin D which will produce a narrow and continuous line of calcium deposits in the metaphyses of the distal ends of the radii and ulnae of standard rachitic rats, as described below, when fed under standard conditions as described below. Parenthetically it may be stated that an average cod liver oil taken as standard for limiting the concentration of pharmaceutical preparations contains one rat unit of vitamin D in each 75 mgs. This can therefore be taken as a point of reference.

Rats suitable for test as standard rachitic rats may be prepared as follows: they must be born of and reared by rats kept on a stock ration low in antirachitic potency until they have attained an approximate weight of 60 grams at an age of 25 to 30 days in litters not larger than six to which number all litters must be reduced at an age of one week.

A ration suitably low in antirachitic potency for this purpose has the following composition: yellow corn 71, linseed oil meal 16, crude casein 5, alfalfa meal 2, butterfat 5, bone ash 0.5, sodium chloride 0.5—fed with fresh whole milk and water ad libitum. All the constituents of the solid portion of the ration must be finely ground so as to prevent selection by the animals. If fresh whole milk is not available there may be used instead a mixture of whole milk powder, 1 part, and the aforedescribed solid grain mixture, 2 parts.

When the rats as produced above have reached the approximate weight of 60 grams they are made standard rachitic rats by transference to and maintenance on a very finely ground richets-producing diet (Ration 2965, J. B. C. 64,263, 1925) consisting of yellow corn, 76; wheat gluten, 20; calcium carbonate, 3; and sodium chloride, 1. Maintenance on this diet must be continued for from 21 to 30 days, the exact time being determined by the rapidity with which rachitic symptoms develop. They are suitable for test as standard rachitic rats when they have developed a peculiar shambling wobbly gait, characterized best by their walking "down in the haunches" rather than "up on the toes." When they have reached this rachitic state they must be taken for test within a few days, otherwise the skeletal tissues may become excessively impoverished in calcium salts, which impoverishment is not evidenced by increase in the width of the rachitic metaphyses, but nevertheless it makes the animals less susceptible in response to vitamin D effects. Having attained a suitable rachitic condition, the rats are weighed and segregated individually in small cages provided with shavings as litter.

Digitized by Google

The standard feeding conditions are as follows: The desired amount of supplement is incorporated thoroughly in 50 grams of the aforedescribed 2965 ration. This is fed to the rachitic rat with daily record of consumption until consumed. The rat is then given unsupplemented 2965 ration until 10 days have elapsed counting from the beginning of the supplementary period.

The effect of feeding supplemented ration is determined as follows: The animals are killed at the end of the 10-day period by means of ether and the distal ends of the radii and ulnae are examined for calcium deposits according to the Johns Hopkins technique (J. B. C. 5k, 41, 1922). However, the use of a microscope for the examination of the specimens is not necessary. Evidences of congestion in the rachitic metaphyses should be carefully distinguished from calcium salts stained with silver, and tests with rats showing poor consumption should be discarded. Failure of consumption for a day at the beginning of the test will not lead to erroneous results, but failure for two days may and usually does. If the removed bone specimens are kept in 10 percent of formalin for a few hours they will stain more distinctly.

Interpretation of results. When the observed calcium deposits are more extensive than a narrow line the test should be repeated using smaller amounts of supplement, because a correct evaluation is possible only when the calcium deposits approach in amount a narrow continuous line. If the deposits are more extensive the preparation subject to test should be fed in smaller amounts until the desired results as expressed above are approximated. At least ten rats should be used for each test and the average response taken for the results.

In the case of materials which contain large amounts of phosphorous or calcium which make it necessary to compare the untreated with the treated by other means that the line test, for instance by comparative ash content of bone, the increase in vitamin D content in the treated material can be arrived at by determining the amount of standard cod-liver oil which must be added to the untreated material to produce the same effect.

Letter Agreement

Wisconsin Alumni Research Foundation,
Madison, March 24, 1930.

Mr. L. M. Hanks,
First National Bank, Madison, Wisconsin.

Dear Mr. Hanks:

LIMITATION OF COST OF LITIGATION IN CONNECTION DRY MILK COMPANY

In connection with Article 9 of the Dry Milk Company contract relative to cost of possible litigation it was agreed between the Foundation representatives and the Dry Milk Company representatives that the liability of the Dry Milk Company for costs in case of any possible litigation would be limited to a sum not in excess of for their portion. The contract calls for a distribution of one-half of the reasonable costs of any litigation among all of the licensees, and Mr. Callan was anxious to have a specific limitation put upon this amount, which amount of would be satisfactory to his company.

Mr. Hobbs and I objected to putting this into the contract but said that we would furnish a statement to this effect that could be considered as a part of the contract as a side arrangement. Will you therefore attach this note to the Dry Milk Company's contract so that our records may show the arrangement which was entered into?

Very truly yours,

Wisconsin Alumni Research Foundation,
Per (Signed) H. L. Russell.

Supplemental Agreement

This supplemental agreement made this 17th day of August 1933, between the Wisconsin Alumni Research Foundation, hereinafter called the "Foundation" and The Dry Milk Company, Inc., hereinafter called the "Milk Company,"

Witnesseth:

That, Whereas, said parties have heretofore, on January 1, 1930, entered into a certain license contract relating to the irradiation of Dryco under patent rights owned by the Foundation; and

Digitized by Google

Whereas, the Supplee patent applications referred to in Sections 3 and 6 of said contract consisted of a United States application upon which Supplee Patent No. 1,817,936 was granted on August 11, 1931, and various foreign applications corresponding thereto on which Canadian Patent No. 306,562, dated December 9, 1930, British Patent No. 298,585, dated June 11, 1927, French Patent No. 636,749, dated June 25, 1927, Spanish Patent No. 103,342, dated November 26, 1927, and Italian Patent No. 268,211, dated August 29, 1927, have issued and a German application which is still pending, such applications being the only Supplee applications owned or controlled by the Milk Company, relating to irradiation of milk or milk products; and

Whereas, by Section 6 of said license agreement the Milk Company granted the Foundation the right to grant licenses under patents issued on said Supplee applications upon terms which the parties desire to change as hereinafter provided; and

Whereas, said Supplee patents are in the nature of an improvement upon the processes and products claimed in the Foundation's Steenbock Patent No. 1,680,818, and corresponding foreign patents or applications, and it is the desire of the Foundation to grant licenses jointly under the Supplee and Steenbock patents without specifying in said licenses the proportion of total royalty received which is specifically applicable to the Supplee patent; Now, therefore, it is agreed as follows:

I

Section 6 of said contract of January 1, 1930, is hereby amended to read as follows:

"6. Milk Company agrees to apprise the Foundation promptly of all discoveries and intentions it has or may hereafter have during the life of this agreement, relating to equipment or processes for imparting antirachitic qualities to milk and its products, on which it may have made patent applications (including United States Supplee Patent No. 1,817,936, dated August 11, 1931, and various foreign applications corresponding thereto on which Canadian Patent No. 305,562, dated December 9, 1930, British Patent No. 298,585, dated June 11, 1927, French Patent No. 636,749, dated June 25, 1927, Spanish Patent No. 103,342, dated November 26, 1927, and Italian Patent No. 268,211, dated August 29, 1927, have issued and a German application which is still pending), hereby granting to the Foundation and its other or future licensees, full license throughout the world as to all suitable products to use such discoveries and inventions subject to the conditions hereinafter named.

"The Milk Company shall diligently prosecute said Supplee German patent application, and shall bear all expenses connected therewith and, in the event that any claims therein are rejected by the Examiner, the Milk Company shall inform the Foundation so that the Foundation may have an opportunity to cooperate with the Milk Company to secure favorable action. If the Milk Company at any time decides that it does not wish to further prosecute said Supplee German application, it shall notify the Foundation in writing of its decision and, if requested in writing by the Foundation, shall assign said German application to the Foundation, and, upon such assignment, or in the absence of a written request from the Foundation to assign within thirty (30) days after such notice of its decision, the Milk Company shall have no further obligation to prosecute such German Supplee application or bear any future expenses connected therewith.

"The Milk Company shall be obligated to maintain and pay taxes on said foreign Supplee patents owned or controlled by it so long as the royalty payments which it receives from the Foundation as hereinafter provided are at least equal to the total expense involved in maintaining said foreign patents in question.

"In consideration of the right to grant licenses to others under said Supplee patent No. 1,817,936, and said foreign patents corresponding thereto which may be granted to and owned by the Milk Company, the Foundation agrees to make to the Milk Company the following payments within thirty (30) days after the royalty payments to Foundation are received out of which the payments to the Milk Company are to be made:

"1. In all cases in which the Foundation grants licenses for the irradiation of fluid milk by ultraviolet rays under any of its own patents and/or said Supplee patent No. 1,817,936 and/or any foreign patent corresponding thereto owned by the Milk Company, percent of all royalties received by the Foundation for such licenses granted under any one or more of such patents. The term 'fluid milk', as used herein means the normal lacteal secretion of the cow (including raw milk, pasteurized milk, skimmed milk, and buttermilk, as these terms are commonly understood in the trade), when sold for consumption as such.

Digitized by Google

"2. In all cases in which the Foundation grants jointly licenses under Supplee patent No. 1,817,936 (or foreign patents corresponding thereto owned by the Milk Company) and other patents owned or controlled by the Foundation (or under any such Supplee patents alone) for the irradiation of dairy products other than fluid milk, as, for instance, evaporated milk, condensed milk, or other dairy products securing their source of vitamin D from the addition thereto of irradiated milk _____ per cent of all royalties received by the Foundation for such licenses; provided, however, that such payments shall only be made in cases where the invention claimed in such Supplee patent is actually used by the licensee.

"In the event that disputes arise between the Foundation and the Milk Company as to whether or not the invention claimed in the Supplee patent is being actually used by the Licensee, the parties agree to settle each such dispute by arbitration as hereinafter provided and to abide by the award of the majority of the arbitrators.

"In the event that such arbitration is required, the board of arbitrators shall consist of three members, one of which shall be appointed by each party and the two thus appointed shall select a third. If either party refuses or neglects to appoint an arbitrator within thirty (30) days after written request by the other party so to do, or if the two arbitrators appointed fail to select a third within thirty (30) days after the appointment of the second arbitrator, either party hereto may call upon the President of the United States Chamber of Commerce to appoint such arbitrator or arbitrators as the case may require.

"Such arbitration proceedings shall be strictly private between the Foundation and the Milk Company. The arbitrators shall prescribe the procedure to be followed by the parties in presenting the matter for their consideration and the decision of the majority of the arbitrators shall be binding upon both parties, except as qualified in this paragraph. Each party shall be responsible for the compensation of the arbitrator appointed by it and share equally the compensation of the third arbitrator. The other expenses of arbitration shall be paid by either party or both as the arbitrators may direct. The decision of the arbitrators shall bind the parties only for the purpose of determining the allocation of royalties between the Supplee patents and patents owned or controlled by the Foundation, pursuant to paragraph 2 of this section 6.

"In granting licenses under a patent or patents of the Milk Company other than said Supplee patent No. 1,817,936 and/or said foreign patents corresponding thereto, the number and date of issue of each Milk Company patent shall be specified by the Foundation in each license so granted unless otherwise agreed. The Foundation agrees to pay to the Milk Company percent of all monies it receives as license royalties upon said patents."

II

Cancellation or termination of said license contract of January 1, 1930, shall not operate as a termination of the Foundation's rights to use or grant licenses under said Supplee patent No. 1,817,936 and/or said foreign patents corresponding thereto, owned by the Milk Company so long as the Foundation continues to make the payments to the Milk Company provided for in Section 6 of said agreement as amended in Article I hereof for such rights under said Supplee patents.

III

In the event said Supplee Patent No. 1,817,936 shall be declared invalid by any court of last resort, or any lower court from whose decision no appeal is taken within the time allowed by law, the payments for the right to grant licenses under said Supplee patent No. 1,817,936 and/or any foreign patents corresponding thereto provided for in Section 6 of said agreement of January 1, 1930, as amended by Article I hereof, need not thereafter be made by the Foundation to the Milk Company.

IV

If the Foundation by written notice requests the Milk Company to bring suit for infringement of said Supplee patent, setting forth in said notice information which would lead a reasonable man to believe that infringement is being committed, and the Milk Company does not within ninety (90) days after such request bring suit for infringement of said patent, the Foundation shall have the right to bring a suit at its own expense in the name of the Milk Company and

Digitized by Google

to retain for its own use any judgment collected therein, provided, however, that the Milk Company shall not be requested to bring or prosecute more than one suit at a time for the purposes of this section.

[CORPORATE SEAL]

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) T. E. BRITTINGHAM, JR., *President.*

Attest:

L. M. HANKS, *Secretary.*

Approved:

H. L. RUSSELL, *Director.*

[CORPORATE SEAL]

THE DRY MILK COMPANY, INC.,
By (Signed) WILLIAM CALLAN, *President.*

Attest:

J. A. MILLER,
Assistant Secretary.

AGREEMENT

This Agreement made this 28th day of February 1934, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation, not for pecuniary profit, hereinafter called the "Foundation", the DRY MILK COMPANY, INC., a Delaware corporation, hereinafter called "Milk Company", and THE BORDEN COMPANY, a New Jersey corporation, hereinafter called "Borden";

WITNESSETH:

That whereas, the Foundation and the Milk Company, on January 1, 1930, entered into a certain License Agreement relating to the irradiation of DRYCO under patent rights owned by the Foundation; and

Whereas, the Foundation and the Milk Company, on August 17, 1933, entered into a certain Supplemental Agreement supplementing said agreement of January 1, 1930; and

Whereas, Borden is the owner of the entire capital stock of the Milk Company; and

Whereas, Borden and the Milk Company and the National Carbon Company, Inc. (a New York corporation which is not affiliated in any way with Borden or the Milk Company) have jointly worked upon the development of types of apparatus or processes, for which the Supplee-Dorcas application specified in the next paragraph were filed, suitable for the practice of the processes described and claimed in United States Letters Patent No. 1,680,818 owned by the Foundation, and the exact interests which Borden, the Milk Company and the National Carbon Company own respectively in said Supplee-Dorcas inventions and applications will have to be settled by agreement between said three companies; and

Whereas, Borden and the Milk Company own approximately a 50% undivided interest in the said applications for United States Letters Patent, Serial No. 690410, filed September 21, 1933, and Serial No. 690411, filed September 21, 1933 of G. C. Supplee and M. J. Dorcas, and any patents to be issued thereon, relating to apparatus and processes suitable for the practice of the processes described and claimed in United States Letters Patent No. 1,680,818, owned by the Foundation; and

Whereas, Borden and the Milk Company expect to make arrangements with National Carbon Company, Inc., with respect to their joint interests in said inventions, whereby Borden will be entitled by reason of its said interest to receive, save in some instances, ------% of the royalties collected from licensees under said two Supplee-Dorcas patent applications and any patents to be issued thereon; and

Whereas, all of the parties hereto are desirous of modifying in certain particulars said Agreement of January 1, 1930 between Foundation and the Milk Company, as amended by said Supplemental Agreement of August 17, 1933, between said parties and of entering into certain contractual undertakings relating to said two Supplee-Dorcas patent applications and other matters;

Now, therefore, in consideration of one dollar and other good and valuable considerations and of the mutual covenants and conditions herein contained, the parties hereto agree as follows:

I

The Foundation grants to Borden and its subsidiaries a nonexclusive license to use the invention described in Letters Patent No. 1,680,818 and improvements thereon acquired by the Foundation, to manufacture and sell the product sold by Borden and/or its subsidiaries under the name "KLIM," under the same terms

Digitized by Google

and upon the same conditions (except as hereinafter provided) as the Foundation, under the License Agreement of January 1, 1930, between the Foundation and the Milk Company, granted to the Milk Company a nonexclusive license to use the invention in said Letters Patent No. 1,680,818 and improvements thereon acquired by the Foundation in the manufacture and sale of the product sold by said Milk Company under the name "DRYCO." Each and every clause of said Agreement of January 1, 1930 (except as hereinafter provided) as applied to the product KLIM shall be considered a part of the license herein granted to Borden and its subsidiaries as if incorporated herein; provided, however, that the minimum guarantee contained in Clause 3 of said License Agreement of January 1, 1930, which is as follows:

> "The Milk Company guarantees that the royalty payable to the Licensor under the terms of this section will not be less than $_____ for each year of this license,"

shall be the minimum annual royalty payable to the Licensor by the Milk Company and/or Borden and/or subsidiaries of either of them collectively for the manufacture and sale both by the Milk Company of DRYCO and by Borden and/or its subsidiaries of KLIM, as provided by said License Agreement of January 1, 1930, and by this agreement, and provided, further, that Clause 6 of said Agreement of January 1, 1930, either as originally existing or as amended by said Supplemental Agreement of August 17, 1933, shall not be considered as a part of or as a term or condition of this clause of this agreement.

II

The Milk Company and Borden agree that no product made under this Agreement or under the License Agreement of January 1, 1930 between the Foundation and the Milk Company, as amended by the Supplemental Agreement of August 17, 1933, between said parties, including DRYCO and KLIM, shall be knowingly used and/or directly or indirectly knowingly sold by the Milk Company and/or Borden and/or subsidiaries of either of them as a source of Vitamin D for any other product or products whatsoever, whether or not the manufacturer or producer of such other product or products is or is not a licensee of the Foundation, when such other product or products are intended to be sold or resold on a commercial basis.

III

The Milk Company and Borden agree to pay to the Foundation _____ % of the gross royalties received by them and/or either of them and/or by subsidiaries of either of them from licenses that have been or may be hereafter granted for the use of the inventions described and claimed in the two Supplee-Dorcas patent applications, Serial No. 690410 and Serial No. 690411 now pending in the United States Patent Office and/or in any patents that may be granted thereon. The Milk Company and Borden fruther agree to pay to the Foundation _____% of the gross royalties received by them and/or either of them and/or subsidiaries of either of them for the use of any and all discoveries and inventions that the Milk Company and/or any of its subsidiaries now owns or has an interest in or may hereafter own or acquire an interest in during the life of the Steenbock Patent No. 1680818 (except purchased patents as hereinafter defined and provided for) relating to equipment, apparatus, machinery or processes for imparting antirachitic properties to milk and its products by direct or indirect irradiation, including any and all improvements upon the inventions described in said two Supplee-Dorcas patent applications, on which there are now or hereafter may be patent applications filed and/or patents issued in the United States or elsewhere. The Milk Company and Borden further agree to pay to the Foundation _____ % of the gross royalties received by them and/or either of them and/or subsidiaries of either of them for the use of any and all discoveries and inventions that Borden and/or any of its subsidiaries (except the Milk Company) now owns or has an interest in or may hereafter own or acquire an interest in during the life of the Steenbock Patent No. 1680818 (except purchased patents as hereinafter defined and provided for) relating to equipment, apparatus, machinery or processes for imparting antirachitic properties to milk and its products by direct or indirect irradiation, including any and all improvements upon the inventions described in said two Supplee-Dorcas patent applications, on which there are now or hereafter may be patent applications filed and/or patents issued in the United States or elsewhere.

Digitized by Google

The Milk Company and Borden further agree to pay to the Foundation, in the event of the sale by them or by either of them or by subsidiaries of either of them of any of the patents, patent applications or inventions referred to in this clause of this agreement, the same percentage of the proceeds of such sale as under this clause of this agreement the Foundation would be intitled to receive from the gross royalties collected by Borden and/or the Milk Company and/or subsidiaries of either of them from Licenses under said patents, patent application or invention.

It is agreed that Borden and Milk Company may make any contract with National Carbon Company, Inc., that they may desire to definitely determine their respective interests in said Supplee-Dorcas applications, so long as Borden and the Milk Company endeavor in good faith to secure as large an interest as practical and that such contract is not to be construed as a sale of Borden or Milk Company patents, patent applications or inventions within the meaning of the preceding paragraph.

A purchased patent is defined as a patent or patent right acquired hereafter by Borden and/or the Milk Company and or subsidiaries of either of them for money consideration paid to persons or corporations other than affiliated or subsidiary corporations of Borden and/or the Milk Company. In the case of each or any of such purchased patents, the Foundation shall not be entitled to receive any share of the royalties or selling price paid to Borden and/or the Milk Company and/or subsidiaries of either of them for the use or sale of inventions covered thereby unless and until such royalties or selling price have amounted to such an amount as will reimburse Borden and/or the Milk Company and/or any of such subsidiaries for the consideration paid therefor, with interest thereon at —% per annum from the date such consideration was paid. Thereafter the Foundation shall be entitled to share in the royalties and/or proceeds of sale received by Borden and/or the Milk Company and/or subsidiaries of either of them as is above provided in case of future inventions of Borden and/or the Milk Company and/or subsidiaries of either of them. It is understood and agreed that from and after the date of this Agreement all future inventions, patents or patent rights made or acquired by the Milk Company, which would but for this Agreement be dealt with in accordance with the provisions of clause 6 of said Agreement between Foundation and the Milk Company of January 1, 1930 as amended by said Supplemental Agreement of August 17, 1933, shall be dealt with as provided in Clause III of this Agreement instead of as provided in said Clause 6.

It is understood and agreed that the rights of the Foundation with respect to Supplee Patent No. 1,817,936 are as provided in said Agreement between the Milk Company and the Foundation, dated January 1, 1930, as amended and modified by said Supplemental Agreement of August 17, 1933, and that Borden's ownership of said patent is subject to the rights therein granted by the Milk Company to the Foundation. It is further agreed that the license to Borden and its subsidiaries under said Supplee patent included in the License Agreement between the Foundation and Borden relative to unsweetened evaporated milk, dated February 28th, 1934, and the letter agreement dated February 28th, 1934, modifying and interpreting the same, was included therein so that the contract executed by Borden should be identical in form with the contract executed by the other licensees named therein, and such inclusion shall not be used for the purpose of construing or interpreting or modifying the respective rights which the Milk Company, Borden, and the Foundation enjoy with respect to said Supplee patent by virtue of said agreements of January 1, 1930, and August 17, 1933.

It is understood and agreed that so long as Borden continues to pay the minimum annual royalty provided for in the terms of said license agreement between the Foundation and Borden with respect to the irradiation of unsweetened evaporated milk, dated February 28th, 1934, and the letter agreement, dated February 28th, 1934, construing and modifying the same, the Foundation will not under the arbitration provisions of said Supplemental Agreement of August 17, 1933, between the Milk Company and the Foundation, contend that the said Supplee Patent No. 1,817,936, is not used in the irradiation of unsweetened evaporated milk under Steenbock Patent No. 1,680,818 by any person or corporation now or hereafter licensed by the Foundation to irradiate unsweetened evaporated milk, provided, however, that nothing contained herein shall affect the right of the Foundation to contend that said Supplee Patent No 1,817,936 is not used in the irradiation of unsweetened evaporated milk by licensees of the Foundation in the event of cancellation by Borden of said License Agreement between the Foundation and Borden with respect to the irradiation of unsweetened evaporated milk under the terms of said agreement relating to cancellation thereof, or cancellation by the Foundation under the terms thereof by reason of a default by Borden or in the event of the expiration of said License Agreement without renewal by Borden under the terms thereof.

Digitized by Google

IV

In consideration of the Foundation's waiver of its claim to and interest in or under the two Supplee-Dorcas patent applications, No. 690,410 and No. 690,411, and other Milk Company inventions, save that provided for in this contract, the Milk Company and Borden agree that they will not use said Supplee-Dorcas inventions or other inventions referred to in clause III in the proceeds of which the Foundation is given an interest, in such a way as to aid others in infringing the Foundation's patents, and that end agree that in every license that may hereafter be granted during the life of Steenbock Patent No. 1,680,818 by Borden and/or the Milk Company and/or subsidiaries of either of them to use the inventions described and claimed in the said two Supplee-Dorcas patent applications and/or in the patents that may be issued thereon and/or to use any improvement that may hereafter be made in said inventions and/or to use any invention Borden and/or the Milk Company and/or subsidiaries of either of them now own or have an interest in or may hereafter own or acquire an interest in during the life of this agreement relating to equipment, apparatus or machinery suitable for use in imparting antirachitic properties to milk and its products by direct or indirect irradiation, there will be inserted a limitation restricting said licensee during the life of Steenbock Patent No. 1,680,818 under any of said patents, patent applications or inventions from

(1) making for sale and/or from selling for use and/or from leasing machines or apparatus made under said license to persons not already licensed by the Foundation to irradiate milk or its products by the use of ultra violet rays, and

(2) delivering said machines or apparatus to the purchasers and/or lessees thereof without first obtaining from the Foundation its written authorization to deliver said apparatus or machines to said purchasers or lessees.

For the same consideration and to the same end, the Milk Company and Borden further agree that in the event that any machine or apparatus embodying and/or for use in accordance with any of the patents, patent applications, and inventions referred to in clause III of this agreement is manufactured for sale and/or lease by Borden and/or Milk Company and/or subsidiaries of either of them during the life of Steenbock Patent 1680818:

(*a*) no such machine or apparatus will be sold and/or leased to any person not already licensed by the Foundation to irradiate milk or its products by the use of ultra rays, and

(*b*) no such machines or apparatus will be delivered to any purchaser and/or lessee thereof without the written authorization of the Foundation to deliver said apparatus or machines to such purchaser or lessee.

The Foundation agrees that it will, during the life of Steenbock Patent No. 1680818, at the request of the Milk Company and/or Borden and/or Licensees of either the Milk Company or Borden under any of the patents, patent applications, or inventions referred to in clause III of this agreement, grant a nonexclusive license for the direct irradiation of fluid milk by the use of ultraviolet rays to any prospective purchaser and/or lessee from the Milk Company, Borden or their licensees as aforesaid, of any apparatus or machine suitable for the direct irradiation of fluid milk by the use of ultraviolet rays and embodying any of the inventions referred to in this clause of this agreement, manufactured by the Milk Company and/or Borden and/or licensees of either of them under any of the patents, patent applications, or inventions referred to in this clause of this agreement; provided, however, that said prospective purchaser or lessee is, in the opinion of the Foundation, a person or concern of a sufficiently high degree of reliability and integrity as to justify the Foundation in granting such license.

V

Cancellation or termination of the License Agreement of January 1, 1930, between the Foundation and the Milk Company and/or cancellation or termination of the license herein granted to Borden to irradiate the product KLIM and/or cancellation or termination of the License Agreement between the Foundation and Borden with respect to the irradiation of unsweetened evaporated milk, dated February 28, 1934, and the letter agreement, dated February 28, 1934, modifying and interpreting the same, shall not operate as a termination of the Foundation's rights to receive the respective percentages of royalties and/or proceeds of sale from the patents, patent applications and inventions set forth and provided for in clause III of this agreement, so long as the Foundation shall

Digitized by Google

continue to make the payments to the Milk Company it is obligated to make by clause VI of said agreement of January 1, 1930, between the Foundation and the Milk Company, as amended by said Supplemental Agreement of August 17, 1933, between said parties and as modified by this agreement.

IN WITNESS WHEREOF, the parties hereto have by their respective duly authorized officers, set their hands hereto and caused their respective corporate seals to be affixed the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*

Attest:
[SEAL] (Signed) L. M. HANKS, *Secretary.*

THE DRY MILK COMPANY, INC.,
By (Signed) WILLIAM CALLAN, *President.*

Attest:
[SEAL] (Signed) T. D. WAIBEL.
Assistant Secretary.

THE BORDEN COMPANY,
By (Signed) WALTER PAGE, *Vice President.*

Attest:
(Signed) W. H. REBMAN, *Secretary.*

SUPPLEMENTAL AGREEMENT

This Supplemental Agreement made this First day of May, 1937, between the Wisconsin Alumni Research Foundation, hereinafter called the "Foundation" and the Casein Company of America, Inc., hereinafter called the "Casein Company".

WITNESSETH:

Whereas the Foundation and the Dry Milk Company, Inc., a Delaware Corporation, on January 1st, 1930, entered into a certain license agreement relating to the irradiation of the Dry Milk Company's product known as Dryco, under certain patent rights owned by the Foundation, and

Whereas said license agreement was modified in certain respects by a certain supplemental agreement entered into between the Foundation and the Dry Milk Company, Inc., on August 17th, 1933, and by a certain agreement entered into by the Foundation, the Dry Milk Company, Inc., and the Borden Company, a New Jersey corporation, on February 28th, 1934, and

Whereas since the date of said original license agreement of January 1st, 1930, and of said other agreements above referred to, the Dry Milk Company, Inc., and the Casein Company were merged into a corporation known as the Casein Company of America, Inc., and

Whereas the parties hereto desire to further modify said license agreement of January 1st, 1930, as heretofore amended. Now, therefore, it is agreed as follows:

I

The second sentence of Section III of said license agreement of January 1st, 1930 is hereby amended to read as follows:

The Milk Company guarantees that the royalty payable to the Licensor under the terms of this section will not be less than Dollars for each year of this license after the expiration of the calendar year 1936.

II

Except as herein expressly modified, all of the terms, conditions, and provisions of said original license agreement of January 1st, 1930, between the Foundation and the Milk Company, as modified by said other agreements, shall be and remain in full force and effect between the parties hereto.

In witness whereof the parties hereto have, by their respective duly authorized officers, set their hands hereto, and caused their respective corporate seals to be affixed the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
[SEAL] By GEO. I. HAIGHT, *President.*
Attest: L. M. HANKS, *Secretary.*

CASEIN COMPANY OF AMERICA, INC.,
[SEAL] By WILLIAM CALLAN, *President.*
Attest: J. MILLER, *Asst. Secretary.*

Digitized by Google

CONTRACT

Contract made and executed in duplicate by WISCONSIN ALUMNI RESEARCH FOUNDATION, a corporation not for pecuniary profit, organized and existing under and by virtue of the laws of the State of Wisconsin, having an office in Madison, Dane County, Wisconsin, and hereinafter referred to as "Foundation"; CASEIN COMPANY OF AMERICA, INC., a corporation organized and existing under and by virtue of the laws of the State of Delaware, having an office at 350 Madison Avenue, New York, N. Y., and hereinafter referred to as "Casein" and THE BORDEN COMPANY, a corporation organized and existing under and by virtue of the laws of the State of New Jersey, having an office at 350 Madison Avenue, New York, N. Y., hereinafter referred to as "Borden."

WITNESSETH: Whereas, by an instrument duly executed on December 31st, 1937, Borden acquired the business and assets of its wholly owned subsidiary, Casein, including the benefits and rights of Casein under Casein's contract with Foundation, having to do with patent rights relating to irradiation, said contract having been acquired by Casein from the Dry Milk Company, Inc., which entered into said contract with Foundation under date of January 1st, 1930, and

Whereas, CASEIN has not been or is about to be dissolved

Now, therefore, in consideration of the promises and undertakings of the parties to this contract, as hereinafter set forth, Foundation, Casein, and Borden, intending to be legally bound thereby, mutually agree as follows:

1. Casein has transferred to Borden Casein's rights and benefits under said contract and hereby confirms said transfer of said contract as of December 31st, 1937. Furthermore, Casein has delegated to Borden Casein's duties and obligations under said contract and hereby confirms said delegation as of December 31st, 1937.

2. Borden has accepted and hereby confirms its acceptance of said rights and has assumed and hereby confirms the assumption of said duties and obligations.

3. Foundation has and hereby does agree to said transfer of said rights and benefits and the delegation of said duties and obligations to Borden.

In witness whereof, Foundation has duly executed and sealed this contract at Madison, Wisconsin, on March 4th, 1938.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT.

Attest:

TIMOTHY BROWN, *Asst. Secretary.*

In witness whereof, Casein has duly executed and sealed this contract at New York, N. Y. on Febr. 3, 1938.

CASEIN COMPANY OF AMERICA, INC.,
By WILLIAM CALLAN, *Pres.*

Attest: MILLER, *Asst. Secretary.*

In witness whereof, Borden has duly executed and sealed this contract at New York, N. Y. on Febr. 3, 1938.

THE BORDEN COMPANY,
By G. M. WAUGH, JR.
Executive Vice President.

STATE OF ILLINOIS,
County of Cook, ss:

On this 4th day of March 1938, before me personally came George I. Haight, to me known, who, being by me duly sworn, did depose and say: that he resides at Evanston, Illinois; that he is the President of WISCONSIN ALUMNI RESEARCH FOUNDATION, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is said corporate seal; that it was so affixed with due corporate authority and that he signed his name thereto with like authority.

FRANCES SAVAGE, *Notary Public.*

STATE OF NEW YORK,
County of New York, ss:

On this 4th day of February 1938, before me personally came William Callan to me known, who, being by me duly sworn, did depose and say: that he resides at Bronsville, N. Y.; that he is the President of CASEIN COMPANY OF AMERICA, INC., the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is said corporate seal; that it was so affixed with due corporate authority and that he signed his name thereto with like authority.

FRANK A. DARNULO, *Notary Public.*

Digitized by Google

STATE OF NEW YORK,
County of New York, ss:

On this 4th day of February 1938, before me personally came G. M. Waugh, Jr., to me known, who, being by me duly sworn, did depose and say: that he resides ar Scarsdale, N. Y.; that he is the Exec. Vice President of THE BORDEN COMPANY, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is said corporate seal; that it was so affixed with due corporate authority and that he signed his name thereto with like authority.

FRANK A. DARNULO, *Notary Public.*

This agreement made this 10th day of August 1933 between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for pecuniary profit (hereinafter called "Licensor"), and THE WANDER COMPANY, a corporation of the State of Delaware, having its principal office and place of business at 180 North Michigan Avenue, Chicago, Illinois (hereinafter called the "Licensee"),

WITNESSETH:

Whereas the Licensor is a corporation organized under Chapter 180, Wisconsin Statutes, to promote, encourage, and aid scientific investigation and research at the University of Wisconsin by the faculty, staff and alumni and students thereof, and those associated therewith, in providing means and machinery by which their scientific discoveries, inventions, and processes may be developed and applied and patented, and public, commercial, and humanitarian uses thereof determined and utilized, and by which such utilization or disposition may be made of such discoveries, inventions, or processes and patent rights or interest therein, as may tend to stimulate, promote, and provide funds for further scientific investigations and research within said University or departments thereof; and

Whereas the Licensor is the owner of United States Letters Patent No. 1,680,818, issued August 14th, 1928, and United States Letters Patent Nos. 1,871,136 and 1,871,135, issued August 9th, 1932, upon the applications of Harry Steenbock upon antirachitic products and processes, and also of the Steenbock pending United States patent applications Serial Nos. 290,705, filed July 5, 1928, and 611,444, filed May 14, 1932; and

Whereas the Licensee desires to secure a license under said patents and applications to practice the inventions therein described to enhance the Vitamin D potency of its product sold under the name of Ovaltine, it is agreed:

I

The Licensor grants to the Licensee a license under United States Letters Patent Nos. 1,680,818, 1,871,136, and 1,871,135, and said applications, Serial Nos. 290,705 and 611,44, together with all improvements thereon made or acquired by the Licensor during the life of this contract, to activate the product known by the trade name Ovaltine by any of the following methods:

(a) By the purchase and use of irradiated ergosterol;
(b) By direct treatment of the milk or other ingredient used in the manufacture of Ovaltine by ultraviolet rays; or
(c) By any other method of irradiation which may be hereafter mutually agreed upon.

Licensee shall keep Licensor fully informed as to the method of activation employed by it, and no method or process of activation shall be used by Licensee which shall have been disapproved in writing by the Licensor.

Direct treatment of the milk by ultraviolet rays may be used by the Licensee only in the event that it is demonstrated that by such method of activation it is possible to comply with Section XI hereof.

The word "activate" as used herein means the enhancement of Vitamin D potency by any of the above methods.

II

All irradiated ergosterol that may be used under this license shall be purchased by the Licensee from other licensees of the Licensor licensed to sell such product in the United States.

The Licensee shall have no right itself to irradiate ergosterol with ultraviolet rays, nor shall it have the right to resell or otherwise dispose of irradiated ergosterol purchased under this license except as incorporated into Ovaltine; provided,

Digitized by Google

however, that upon the termination of this license, by lapse of time or otherwise. Licensee shall have the right to dispose of any activated Ovaltine it then has on hand at the royalty rates provided for in this contract.

The two paragraphs of Section numbered II of this contract shall be deemed severable and separable covenants, and in the event of either or both being held invalid or illegal the remainder of the contract shall not be thereby affected in any way.

III

The rights of the Licensee to activate and sell the product known by the trade name Ovaltine under this license are exclusive and extend throughout the United States and its possessions and dependencies.

The Licensor retains the full right to grant other licenses for all products other than Ovaltine except as follows:

(a) The Licensor shall hereafter grant no other licenses covering the territory of this license while this license is in force to activate cocoa or chocolate-flavored food products sold in competition with Ovaltine, which contain malt extract derived from malted grain (such as chocolate malted milk and similar preparations) which are sold mixed or to be mixed with milk for the preparation of a beverage.

(b) If the Licensor grants licenses to activate any food products not chocolate or cocoa flavored which are sold in competition with Ovaltine and contain malt extract derived from malted grain and which are sold mixed, or to be mixed with milk for the preparation of a beverage (such as malted milk and similar preparations), fifty percent of all monies received thereon by the Licensor shall be paid on calendar quarters to the Licensee herein as long as this license remains in force.

The following foods shall not be considered to be sold in competition with Ovaltine, namely: Foods sold solely for infant consumption, cocoa, chocolate, tea or coffee, or milks, whether fluid, evaporated, condensed or dried. The enumeration of the above products as not being sold in competition with Ovaltine shall not be deemed to be exclusive.

IV

The duration of this license, unless otherwise terminated in accordance with the provisions of this contract, shall be for the life of United States Patent No. 1,871,136, or for the life of any other patent falling within the terms of this license, whichever is longest.

V

For the rights and privileges acquired hereunder, the Licensee shall upon the execution of this agreement pay to the Licensor a general license fee of Dollars.

VI

In addition to the general license fee provided for in Section V, the Licensee shall pay to the Licensor quarterly on the twentieth day of January, April, July, and October of each year of the life of this contract, the following royalties upon all Ovaltine sold (excluding, however, free goods and samples) during the three preceding calendar months:

------¢ per pound on the first ------ pounds of Ovaltine sold per year,
------¢ per pound on Ovaltine sold in excess of ------ pounds but less than ------ pounds per year,
------¢ per pound on Ovaltine sold in excess of ------ pounds, but less than ------ pounds per year,
------¢ per pound on Ovaltine sold in excess of ------ pounds per year.

Licensee agrees to proceed promptly and diligently with tests to establish the best medium and methods of activating Ovaltine, in which tests Licensor shall cooperate. Licensee shall go into standardized prdouction of activated Ovaltine as soon as such methods are determined. Licensee shall not be obliged to pay any royalties for the period prior to the beginning of such standardized production. It is understood that the Licensee will use every reasonable effort to go into standardized production on or before January 1, 1934.

For the period beginning with the standardized production of activated Ovaltine, and continuing until Licensee shall publicly announce to the medical profession or otherwise, the presence of the increased content of Vitamin D in Ovaltine (but in no event later than one year from the beginning of standardized production) Licensee shall pay Licensor only one-half of the royalties above provided.

Digitized by Google

It is further understood that in the event the Licensee reduces its sales price of Ovaltine (either by leaving the present Ovaltine content of its respective containers the same, but lowering the price thereof, and/or by leaving the present prices the same, but increasing the Ovaltine content in the containers) the royalties otherwise payable hereunder shall be reduced, after the date of such sales price reduction, by a percentage equal to ____ the percentage of reduction in the sales price per ounce of Ovaltine.

In the event of an increase in price and/or decrease in the Ovaltine content in the containers, the converse of the above method shall be applied to increase the Licensor's royalty.

"Standardized production" as used herein means the activation by the Licensee of substantially all Ovaltine manufactured by the Licensee.

VII

The Licensee guarantees that the royalties payable to the Licensor under Section VI hereof, will be at a rate of not less than _____ Dollars per year from the time that the Licensee goes into standardized production, as provided in Section VI hereof, until the Licensee publicly announces the presence of Vitamin D in Ovaltine (but in no event later than one year from the date that Licensee goes into standardized production).

Beginning at the date the Licensee publicly announces the presence of Vitamin D in Ovaltine (but in no event later than one year from the date that Licensee goes into standardized production) the Licensee guarantees that the royalties payable thereafter will not be less than _____ Dollars for each year that this license remains in effect. The Licensee shall, however, not be obligated to pay to the Licensor in any one year a sum in excess of _____ Dollars.

VIII

The Licensee agrees that during the existence of this license it will activate all of the Ovaltine manufactured by it in the United States after going into standardized production; provided, however, that if after going into standardized production the Licensee finds the taste or flavor of its Ovaltine is adversely affected by activation by the use of irradiated ergosterol, it shall have the right to forthwith cancel this license by notice in writing to that effect.

IX

The Licensee shall have the right to cancel this agreement as of October 1, 1936, and as of October 1 of any year thereafter by serving upon the Licensor six months' prior written notice to that effect.

X

In the event that the Licensee activates Ovaltine by the direct treatment of the milk or other ingredient used therein by ultraviolet rays, the Licensee shall not resell such milk or other ingredient or use it in any way except for the activation of Ovaltine.

XI

The Licensee shall activate its Ovaltine under this license to such degree as to give such product a sufficient Vitamin D content to be of actual practical benefit to the consumer, but not sufficiently high to enable said product to be sold as a medicine for the treatment of rickets. To this end the number of units of Vitamin D to be incorporated in each ounce of Ovaltine shall be not less than twenty Steenbock standard rat units per ounce, nor more than sixty Steenbock standard rat units per ounce.

XII

The Licensee shall not, without the approval of the Licensor, circulate any advertising material naming the Steenbock process, the Steenbock patents, the University of Wisconsin, the Licensor, or Dr. Steenbock. No extravagant or unwarranted advertising claims shall be made by the Licensee for Ovaltine activated under this agreement and specifically attributed to Vitamin D. The Licensee shall furnish the Licensor with copies of representative advertisements in connection with which representations are made as to the Vitamin D content of Ovaltine.

Digitized by Google

It is understood that for the purpose of selecting suitable advertising material in accordance with the spirit of this section, the parties will confer with one another and advertising counsel before any general advertising program relating to Vitamin E is adopted.

XIII

The Licensee shall keep at its principal office true and particular account of all Ovaltine activated and all Ovaltine sold under this license agreement. At the request of the Licensor, upon reasonable notice, such records shall be available for check and audit by the Licensor or a certified public accountant in its behalf. Such records shall be preserved for at least three years. The Licensor will regard information obtained from such records as confidential.

XIV

The Licensee shall properly comply with all statutory provisions pertaining to the marking of patented articles.

XV

The Licensor shall have the right at any time to inspect and test samples of the Licensee's activated Ovaltine and to this end the Licensee agrees to furnish the Licensor upon reasonable notice, such quantity of Ovaltine activated under this license agreement, packed ready for sale, as may be reasonably necessary for the Licensor to test the potency thereof.

XVI

The Licensor shall have the right to prosecute suits for infringement of the Letters Patent by virtue of which the Licensee is operating, and the Licensee, together with all other Licensees under said patent shall be liable for one-half of the reasonable costs of such litigation.

The Licensor shall apportion such one-half of the expenses of said patent litigation among its licensees in such a way that Licensee shall be liable only for such a proportion of the said litigation expenses as its royalties payable hereunder during the year in which such litigation expenses are incurred bear to all the royalties payable by all of the licensees for such year.

In the event of an infringement of the licensed patents by a product competing with Ovaltine, the Licensee shall notify the Licensor in writing of such infringement. If within a reasonable time after such notification, the Licensor does not undertake reasonable steps to abate such infringement, the Licensee at its own expense, and in the name of the Licensor, may sue the infringer of the patents herein licensed, and may reimburse itself for the reasonable expenses incurred or paid in such litigation (including reasonable attorney's fees) from the royalties thereafter payable hereunder. Should there be any recoveries for profits or damages in such litigation, the same shall be paid over to the Licensor, to the extent of the amount of the royalties so retained by the Licensee, the balance of such recoveries, if any, to belong to the Licensee, unless such balance shall include some damages or profits in which some other licensees would have an interest, in which event said balance shall be divided equitably with such other licensees in such a manner as shall then be agreed upon. In any such litigation brought by either of the parties hereto against infringers, the other party shall be entitled to be represented by its own counsel, at its own expense.

Should Licensee be sued for the alleged infringement of any other patent or patents, because of its use under this license of the inventions disclosed and claimed in the licensed patents, the Licensor shall defend such litigation, at its own expense, the Licensee being entitled to be represented therein by counsel of its own selection, at its own expense. Should Licensor fail or refuse to defend such patent litigation, the Licensee shall properly defend the same, and may reimburse itself for its necessary expenses therein (including reasonable attorney's fees) from royalties thereafter accruing to the Licensor under this contract, it being understood that the Licensor shall have the right to be represented in any such litigation, by counsel of its own selection, at its own expense.

It is understood that in the vent the claims of the licensed patents are held invalid, or their scope limited to such an extent as to afford little or no protection to the Licensee, by a court of competent or final jurisdiction, the Licensee shall have the right to cancel this license by written notice to the Licensor to that effect.

Digitized by Google

XVII

If the royalties or any part thereof, shall for a period of thirty days be in arrears, or in case of default by the Licensee in performing any of the agreements herein contained, the Licensor shall have in addition to all other legal or equitable remedies it may have in regard to the enforcement of this contract, the right to revoke this license by serving upon the Licensee thirty days' written notice of such arrears or such default, provided, however, that if the Licensee shall remedy or cure the default or failure because of which said cancellation notice is given, within the thirty-day period mentioned therein, the notice shall be wholly ineffective, and the license shall continue with the same force and effect as if no such cancellation notice had been given.

XVIII

The Licensee shall have no right to assign this license without the approval of the Licensor, except to a corporation controlled by the Licensee through stock ownership, or in connection with the sale of Licensee's entire business. This license shall be binding upon the successors and assigns of the Licensor.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*

Attest:
(Signed) L. M. HANKS, *Secretary.*

THE WANDER COMPANY,
By (Signed) JAMES G. MCMILLAN, *President.*

Attest:
(Signed) THOMAS J. WILD, *Secretary.*

SUPPLEMENTAL AGREEMENT

This Supplemental Agreement made this 22d day of June 1936 between the Wisconsin Alumni Research Foundation, a Wisconsin corporation, hereinafter called "Licensor," and the Wander Company, a corporation of the State of Delaware, having its principal office and place of business at 180 North Michigan Avenue, Chicago, Illinois, hereinafter called "Licensee,"

WITNESSETH:

Whereas the parties hereto entered into a certain license agreement under date of August 10, 1933, in respect of United States Letters Patent Nos. 1,680,818, 1,871,136, and 1,871,135, and also in respect of pending United States Patent applications Serial Nos. 290,705 and 611,444; and

Whereas the Licensee commenced standardized production of activated Ovaltine pursuant to the terms of said license agreement on or about January 1, 1934, and has since said date been paying royalties to the Licensor, pursuant to the terms of said license agreement; and

Whereas under the terms of said license agreement under date of August 10, 1933, the Licensee has the right of cancellation of said agreement as of October 1, 1936, by giving notice in writing prior to April 1, 1936, which date of notice has been extended by stipulation to July 1, 1936; and

Whereas the Licensor desires to have the Licensee waive such right of cancellation as of October 1, 1936, and it is agreeable to the Licensee to waive such right of cancellation; and

Whereas the parties hereto are desirous of making certain other modifications in and amendments to said license agreement of August 10, 1933, with respect to royalty rates and annual minimum guaranteed royalties thereunder:

Now, therefore, for and in consideration of the premises, it is agreed by and between the parties hereto as follows:

I

That Section VI of said agreement of August 10, 1933, is hereby amended to read as follows:

> For the period beginning January 1, 1936, and terminating September 30, 1936, the following base royalty rates shall apply upon all Ovaltine sold (excluding, however, free goods and samples):
>
> ------per pound on the first------pounds of Ovaltine sold during the nine months period January 1–September 30, 1936,

Digitized by Google

------per pound on Ovaltine sold in excess of------pounds but less than ------pounds during the said nine months period.
------per pound on Ovaltine sold in excess of------pounds but less than ------ pounds during the said nine months period,
------per pound on Ovaltine sold in excess of------pounds during the said nine months period.

Starting October 1, 1936, the following base royalty rates shall apply upon all Ovaltine sold (excluding, however, free goods and samples):

------per pound on the first ------pounds of Ovaltine sold per year,
------per pound on Ovaltine sold in excess of------pounds but less than ------pounds per year,
------per pound on Ovaltine sold in excess of------pounds per year.

The royalties calculated on the above base royalty rates from January 1, 1936, shall be reduced by ----% until such time as the sales price of Ovaltine shall be changed by altering the net prices per dozen of $------, $------, and $------ for the 6-ounce, 14-ounce, and 4-pound sizes, respectively.

It is understood that in the event the Licensee reduces its sales price of Ovaltine (either by leaving the present Ovaltine content of its respective containers the same, but lowering the price thereof, and/or by leaving the present prices the same, but increasing the Ovaltine content in the containers, and/or by increasing discounts to the trade), the royalties otherwise payable hereunder shall be reduced, after the date of such sales-price reduction, by a percentage equal to the percentage of reduction in the sales price per ounce of Ovaltine figured from a base price of $------ per pound, being the base price on which the ------% royalty reduction was figured.

In the event of an increase in price and/or decrease in the Ovaltine content in the containers, the converse of the above method shall be applied to increase the Licensor's royalty.

The Licensee shall pay royalties calculated upon the foregoing bases to the Licensor quarterly on the 20th day of January, April, July, and October of each year of the life of this contract upon all Ovaltine sold (excluding, however, free goods and samples) during the three preceding calendar months.

II

That section VII of said agreement of August 10, 1933, is hereby amended to read as follows:

The Licensee guarantees that the royalties payable hereunder will not be less than $ for the period beginning January 1, 1936, and terminating September 30, 1936, and not less than $ for each yearly period commencing October 1, 1936, that this license remains in effect. The Licensee shall, however, not be obligated to pay to the Licensor in any one year a sum in excess of $ Dollars.

III

That Section IX of said agreement of August 10, 1933, is hereby amended to read as follows:

The Licensee shall have the right to cancel this agreement as of October 1, 1937, and as of October 1 of any year thereafter by serving upon the Licensor six months' prior written notice to that effect.

In witness whereof the parties hereto have fixed their hands and corporate seals the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

L. M. HANKS, *Secretary.*

THE WANDER COMPANY,
By JAMES G. MCMILLAN, *President.*

Attest:

E. SCHEIDENHELM, Jr., *Assistant Secretary.*

Digitized by Google

SECOND SUPPLEMENTAL AGREEMENT

The Second Supplemental Agreement made this Fifteenth day of July 1937, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation, hereinafter called "Licensor" and THE WANDER COMPANY, a Delaware corporation, having its principal office and place of business at 360 North Michigan Avenue, Chicago, Illinois, hereinafter called "Licensee,"

WITNESSETH:

Whereas the parties hereto entered into a certain license agreement of August 10, 1933, amended by first supplemental agreement of June 22, 1925, in respect of United States Letters Patent Nos. 1,680,818, 1,871,135, 1,871,136, and 2,057,399; and

Whereas the Licensee commenced standardized production of activated Ovaltine pursuant to the terms of said license agreement as amended on or about January 1, 1934, and has since said date been paying royalties to the Licensor, pursuant to the terms of said license agreement as amended, and

Whereas under the terms of said license agreement as amended, the Licensee has the right of cancellation of said agreement as of October 1, 1937, by giving notice in writing prior to April 1937, which date of notice has been extended by stipulation of August 1, 1937, and

Whereas the Licensor desires to have the Licensee waive such right of cancellation as of October 1, 1937, and it is agreeable to the Licensee to waive such right of cancellation, and

Whereas the parties hereto are desirous of making certain modifications in and amendments to said license agreement of August 10, 1933, as amended by first supplemental agreement of June 22, 1936, with respect to royalty rates, minimum guaranteed royalties, cancellation privileges, vitamin D content of Ovaltine and the inclusion of other products thereunder.

Now, therefore, for and in consideration of the promises and the mutual agreements, it is agreed by and between the parties hereto as follows:

I

That Section VI of said agreement as amended is hereby amended to read as follows:

For the period beginning October 1, 1937, the Licensee shall pay to the Licensor quarterly on the twentieth day of April, July, October, and January of each year of the life of this contract of a cent per pound royalty on all Ovaltine sold (excluding, however, free goods and samples) during the three preceding calendar months.

II

That Section VII of said agreement as amended is hereby amended to read as follows:

The Licensee guarantees that royalties payable hereunder will be not less than dollars for the period beginning October 1, 1937, and terminating December 31, 1938, and not less than dollars for each yearly period commencing January 1, 1939, that this license agreement remains in effect. The Licensee shall, however, not be obligated to pay to the Licensor in any one year a sum in excess of dollars.

III

That Section IX of said agreement is hereby amended to read as follows:

"The Licensee shall have the right to cancel this agreement as of January 1, 1939, and as of January 1, of any year thereafter by serving upon the Licensor not less than three months' prior written notice to that effect."

IV

That Section XI of said agreement as amended is hereby amended to read as follows:

"The Licensee shall activate its Ovaltine under this license to such degree as to give such product a sufficient Vitamin D content to be of actual practical benefit to the consumer, but not sufficiently high to enable said product to be sold as a medicine for the treatment of rickets. To this end the number of units of Vitamin D to be incorporated in each ounce of Ovaltine shall be not less than 54 U. S. P. XI Vitamin D units per ounce, nor more than 270 U. S. P. XI Vitamin D units per ounce."

Digitized by Google

V

The term "Ovaltine" as used in said license agreement of August 10th, 1933, as amended, and in this Supplemental Agreement means the commercial product of the Licensee sold under its trade-mark "Ovaltine", manufactured by substantially the methods now used from the principal raw materials, barley, malt, milk, eggs and cocoa, but subject to minor quantitative variations of the above named ingredients and changes of other minor ingredients.

It is hereby stipulated and agreed that the royalty rates and other provisions of said license agreement, as amended by this Supplemental Agreement, shall apply to the Ovaltine content of any product in granular, powder, liquid or other form sold by the Licensee (excluding, however, free goods and samples). For example, such a product might be a chocolate flavored Ovaltine containing 25% to 50% Ovaltine with the addition of cocoa, sugar and other ingredients, and sold to dairies for addition to milk for distribution by dairies as a chocolate drink under a name such as "chocolate Flavored Ovaltine Drink." The royalties paid and reported on the Ovaltine content of any such product other than Ovaltine shall be included as part of the total payments in the determination of minimum and maximum royalties.

Licensee may increase the Vitamin D content of any product of the cocoa or chocolate flavored type, containing Ovaltine, to be mixed with milk as a beverage (and of no other type) above the Vitamin D contributed by the Ovaltine content of such product by the addition of Vitamin D purchased from other licensees of the Licensor. In such event Licensee shall pay an additional royalty to the Licensor calculated as though the additional Vitamin D content were contributed by additional Ovaltine; provided, however, that the amount of additional Vitamin D shall not exceed an amount which would be furnished a consumer if Ovaltine (mixed with milk and according to directions) was used instead of the product with additional Vitamin D. The royalties paid and reported as hereinabove provided shall be included as part of the total payments in the determination of minimum and maximum royalties.

The royalty rates provided on products other than Ovaltine shall be subject to adjustment and cancellation, at the option of either Licensor or Licensee on January 1st, 1939, and on January 1st of any year thereafter by either party serving upon the other not less than three months' prior written notice to such effect; provided, however, that if the Licensor and Licensee are unable to come to an agreement and the Licensor demands royalty on such products other than Ovaltine in excess of the royalty hereinabove provided, the Licensor agrees that Licensee may use Vitamin D from any source not infringing on the Licensor's patents for such products other than Ovaltine while using in Ovaltine Vitamin D purchased under said license as amended, and paying royalty on said Ovaltine.

VI

It is hereby stipulated and agreed that the reduction in royalty rates and minimum royalty effective starting October 1, 1937, shall not affect the royalty rates and minimum royalty for the period ending September 30, 1937, as provided in the license agreement as amended prior to the execution of this supplemental agreement.

In witness whereof the parties hereto have affixed their hands and corporate seals the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

L. M. HANKS, *Secretary.*

THE WANDER COMPANY,
By JAMES C. MCMILLAN, *President.*

Attest:

E. SCHEIDENHELM, Jr., *Secretary.*

THIRD SUPPLEMENTAL AGREEMENT

This THIRD SUPPLEMENTAL AGREEMENT made this Thirty-first day of December, 1938, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation, hereinafter called "LICENSOR", and THE WANDER COMPANY, a Delaware

Digitized by Google

corporation, having its principal office and place of business at 360 North Michigan Avenue, Chicago, Illinois, hereinafter called "Licensee,"

WITNESSETH:

Whereas the parties hereto entered into a certain license agreement under date of August 10, 1933, amended by first supplemental agreement of June 22, 1936, and by second supplemental agreement of July 15, 1937, in respect of United States Letters Patent Nos. 1,680,818; 1,871,135; 1,871,136, and 2,057,399; and

Whereas the Licensee commenced standardized production of activated Ovaltine pursuant to the terms of said license agreement on or about January 1, 1934, and has since said date been paying royalties to the Licensor, pursuant to the terms of said license agreement as amended, and

Whereas under the terms of said license agreement as amended, the Licensee has the right of cancellation of said agreement as of January 1, 1939, by giving notice in writing prior to October 1, 1938, which date of notice has been extended by stipulation to December 31, 1938, and

Whereas the Licensor desires to have the Licensee waive such right of cancellation as of January 1, 1939, and it is agreeable to the Licensee to waive such right of cancellation, and

Whereas the parties hereto are desirous of amending said license agreement of August 10, 1933, as amended by first supplemental agreement of June 22, 1936, and by second supplemental agreement of July 15, 1937,

NOW, THEREFORE, for and in consideration of the promises and the mutual agreements, it is agreed by and between the parties hereto as follows:

I

That Section VII of said agreement as amended is hereby amended to read as follows:

There shall be no minimum royalty under this license agreement for sales on and after January 1, 1939. For the five-quarter period beginning October 1, 1937, and terminating December 31, 1938, the minimum royalty is hereby reduced to Dollars. The Licensee shall, however, not be obligated to pay the Licensor in any one year a sum in excess of Dollars.

In witness whereof the parties hereto have affixed their hands and corporate seals as of the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*

Attest:
(Signed) T. E. BRITTINGHAM, Jr., *Vice President.*

THE WANDER COMPANY,
By (Signed) HART JOHNSTON, *Vice President.*

Attest:
(Signed) E. SCHEIDENHELM, Jr., *Secretary.*

FOURTH SUPPLEMENTAL AGREEMENT

This FOURTH SUPPLEMENTAL AGREEMENT made this Fifteenth day of November, 1939, between THE WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin Corporation, hereinafter called "LICENSOR," and THE WANDER COMPANY, a Delaware corporation, having its principal office and place of business at 360 North Michigan Avenue, Chicago, Illinois, hereinafter called "Licensee",

WITNESSETH:

Whereas the parties hereto entered into a certain license agreement under date of August 10, 1933, amended by first supplemental agreement of June 22, 1936, by second supplemental agreement of July 15, 1937, and by third supplemental agreement of December 31, 1938, in respect of United States Letters Patent Nos. 1,680,818; 1,871,135; 1,871,136 and 2,057,399; and

Whereas the Licensee commenced standardized production of activated Ovaltine pursuant to the terms of said license agreement on or about January 1, 1934, and has since said date been paying royalties to the Licensor, pursuant to the terms of said license agreement as amended, and

Whereas under the terms of said license agreement as amended, the Licensee has the right of cancellation of said agreement as of January 1, 1940, by giving notice in writing prior to October 1, 1939, which date of notice has been extended by stipulation to November 15, 1939, and

Digitized by Google

Whereas the Licensor desires to have the Licensee waive such right of cancellation as of January 1, 1940, and it is agreeable to the Licensee to waive such right of cancellation, and

Whereas the parties hereto are desirous of amending said license agreement,

Now, therefore, for and in consideration of the promises and the mutual agreements, it is agreed by and between the parties hereto as follows:

I

That Section VI of said agreement as amended is hereby amended to read as follows:

"For the period beginning January 1, 1940, the Licensee shall pay to the Licensor quarterly on the twentieth day of April, July, October, and January of each year of the life of this contract ..... cents per million U. S. P. XI Vitamin D units added to Ovaltine sold (excluding, however, free goods and samples) during the three preceding calendar months."

II

It is hereby stipulated and agreed that the reduction in royalty rate effective January 1, 1940, shall not affect the royalty payable for the period ending December 31, 1939.

In witness whereof the parties hereto have affixed their hands and corporate seals as of the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEO. I. HAIGHT, *President.*

Attest:

(Signed) L. M. HANKS, *Secretary.*

THE WANDER COMPANY
By (Signed) JAMES G. McMILLAN, *President.*

Attest:
[SEAL]

(Signed) E. SCHEIDENHELM, Jr.,
Secretary.

This agreement made this 15th day of July 1939, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for private profit (hereinafter called "the Licensor") and R. B. DAVIS COMPANY, a corporation of the State of New Jersey, having its principal office and place of business at 38 Jackson Street, Hoboken, N. J. (hereinafter called "the Licensee"),

WITNESSETH:

Whereas by agreement dated January 1, 1932, as hereafter amended by subsequent agreements between the parties hereto, the Licensor granted to the Licensee a license under United States Letters Patent No. 1,680,818, owned by the Licensor, to use the invention described in said patent for the antirachitic activation of Licensee's product sold under the name "Cocomalt," which license is still in force and effect, and

Whereas it is the desire of the parties hereto to cancel said previous agreement as heretofore amended and to substitute therefor the agreement to be hereinafter set forth.

Now, therefore, in consideration of the covenants hereinafter set forth and mutually acquiesced in by the parties hereto, it is agreed:

I

The Licensor grants to the Licensee a nonexclusive license under United States Letters Patent No. 1,680,818, to purchase and use irradiated material, as hereinafter defined, for the purpose of activating the Licensee's food beverage product now sold under the trade-mark "Cocomalt," so as to increase the antirachitic properties of the same, subject, however, to the conditions hereinafter set forth.

The phrase "irradiated material" as used in this agreement includes yeast, ergosterol and other activatable substances irradiated with ultraviolet light by the process of said Steenbock patent. All irradiated material used under this license shall be purchased by the Licensee from other licensees of the Licensor licensed to sell such products in the field covered by this license.

Digitized by Google

It is understood that the Licensee shall have no right itself to irradiate ergosterol or other activatable substances with ultraviolet light, nor shall it have the right to resell or otherwise dispose of such irradiated material except as incorporated into the licensed product.

II

The duration of this license shall be for a period of one year from the date hereof.

III

The Licensee shall have the right to sell Cocomalt activated hereunder throughout the world except in Germany.

IV

No royalties shall be payable by the Licensee to the Licensor hereunder, since by separate agreement between the Licensee and International Vitamin Corporation, distributor for Standard Brands Incorporated, it is provided that Standard Brands Incorporated shall during the period of this license pay to the Licensor royalties upon irradiated yeast supplied to the Licensee for its operations hereunder.

V

The Licensee shall not without the approval of the Licensor circulate any advertising material relating to the Steenbock process, the Steenbock patents, the University of Wisconsin, the Licensor or Dr. Steenbock. All such advertising material shall first be submitted to the Licensor for its approval, but such approval shall not be unreasonably refused or delayed.

VI

The Licensor shall have the right at any time to inspect and test samples of the Licensee's product for the purpose of determining the potency thereof.

VII

The Licensor hereby grants the Licensee options to extend the license hereinabove granted for successive periods of one year, commencing with the year beginning July 15th, 1940, provided, however, that each option herein provided for shall be exercised by the Licensee by written notice addressed to the Licensor not less than thirty days prior to the expiration date of this license, or the last renewal license, as the case may be; and provided further that prior to the commencement of the period of such renewal license the Licensee has itself agreed, or caused some other licensee of the Licensor licensed to sell irradiated material to the Licensee hereunder to agree, to pay to the Licensor during the period of such renewal license royalties (in addition to such royalties as such other licensee was obligated on January 1, 1939 to pay to the Licensor under its contract with the Licensor on irradiated material sold to the Licensee) in an amount equal, upon a per million U. S. P. Vitamin D unit basis, to those royalties payable by Standard Brands, Incorporated to the Licensor during the life of this license, pursuant to the above described agreement of June 16th, 1939, between International Vitamin Corporation and the Licensee.

VIII

The Licensee shall not assign this license, or any part of the same. This license shall bind and inure to the benefit of the parties hereto and their respective successors.

IX

Violation of any of the terms or conditions of this license by the Licensee shall constitute sufficient cause for revocation hereof by the Licensor upon 60 days' written notice.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*
Attest: L. M. HANKS, *Secretary.*

R. B. DAVIS COMPANY,
By E. A. HARRISS, *Vice President.*
Attest: B. E. SNYDER, *Secretary.*

Digitized by Google

AGREEMENT

This agreement made as of the first day of March 1939, between WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin Corporation not for pecuniary profit, (hereinafter called "the Licensor") and COMMANDER-LARABEE MILLING COMPANY, a corporation of the State of Delaware, having its principal office and place of business at Minneapolis, Minn., (hereinafter called "the Licensee"),

WITNESSETH:

Whereas, the Licensor is the owner of United States Letters Patent No. 1,680,818, issued August 14th, 1928, upon the application of Harry Steenbock upon Antirachitic Product and Process, hereinafter termed "the Steenbock patent," and

Whereas, the Licensee is engaged in the manufacture of flours both for consumption in the home and for use by commercial bakers in the manufacture of bread and bread stuffs, and

Whereas, by agreements dated July 28th, 1934, as amended by subsequent agreements between the parties hereto, and October 31, 1936, the Licensor granted to the Licensee licenses under said Steenbock patent to activate its branded wheat flours intended for family use and its branded wheat flours manufactured for use by commercial bakers in the production of bread and/or bread stuffs, and

Whereas, it is the desire of the parties hereto to cancel all of said previous agreements, as heretofore amended, and to substitute therefor the agreement to be hereinafter fully set forth.

Now, therefore, in consideration of the covenants hereinafter set forth and mutually acquiesced in by the parties hereto, it is agreed:

I

The Licensor grants to the Licensee a license under United States Letters Patent No. 1,680,818, to purchase and use irradiated material, as hereinafter defined, subject to restrictions and limitations hereinafter imposed, for the purpose of enhancing the Vitamin D potency of Licensee's branded wheat flours sold for family use only, as distinguished from flours sold to commercial bakers or other commercial converters, and to sell such wheat flours; and the Licensor grants to the Licensee a license under said patent to purchase and use irradiated ergosterol, subject to restrictions and limitations hereinafter imposed, for the purpose of enhancing the Vitamin D potency of the Licensee's branded wheat flours manufactured for use by commercial bakers in the production of bread and/or breadstuffs, and to sell such branded wheat flours to such commercial bakers.

The phrase "irradiated material" as used in this agreement includes yeast, ergosterol, and other activatable substances irradiated with ultraviolet light by the process of said Steenbock patent.

All ergosterol irradiated with ultraviolet light by the process of said Steenbock patent, used under this license for the activation of flour for sale to commercial bakers, shall be purchased by the Licensee from E. I. DuPont de Nemours & Company, Wilmington, Delaware, so long as the license agreement of November 15, 1935, between the Licensor and said E. I. DuPont de Nemours & Company remains in force and effect. In the event of the termination by cancellation or otherwise of said agreement of November 15, 1935, between the Licensor and E. I. DuPont de Nemours & Company, thereafter all irradiated ergosterol used under this license for the activation of flour for sale to commercial bakers shall be purchased by the Licensee only from other licensees of the Licensor authorized to sell such product in the field covered by this license. All irradiated material used under this license for the activation of flour for family use shall be purchased by the Licensee from other licensees of the Licensor licensed to sell such products in the field covered by this license.

It is understood that the Licensee shall have no right itself to irradiate ergosterol or other activatable substances with ultraviolet light, nor shall it have the right to resell or otherwise dispose of such irradiated materials, except as incorporated in its licensed flours.

The phrase "Licensee's branded wheat flours for family use only" as used in this agreement shall mean wheat flours sold for family use only, under brand names owned by the Licensee or by subsidiary companies operating under Paragraph XVIII hereof. It is understood that this license does not contemplate the sale of flour under brands owned by the Licensee or its subsidiaries when such flour is intended to be rebranded and resold by others.

Digitized by Google

The phrase "Licensee's branded wheat flours for use by commercial bakers" as used in this agreement shall mean wheat flours sold for use by commercial bakers in the manufacture of bread and/or breadstuffs under brand names owned by the Licensee and/or by subsidiary companies operating under Paragraph XVIII hereof. It is understood that this license does not contemplate the sale of flour under brands owned by the Licensee or its subsidiaries or otherwise when such flour is intended to be rebranded and resold by others. The term "breadstuffs" as used in this license includes rolls, buns, and biscuits (excluding crackers) and the like, according to their ordinary significance to the trade in the United States.

II

The rights granted to the Licensee under this license to purchase and use irradiated material in flour for family use and to purchase and use irradiated ergosterol in commercial bakers flour, and to sell such flours, shall be exclusive during the life of this license. Such rights shall extend throughout the entire United States of America, including territories and possessions thereof so long as the latter remain under the political jurisdiction of the United States.

Nothing herein contained shall affect the rights of the E. I. DuPont de Nemours Company of Wilmington, Delaware, under its agreement with the Licensor of November 15, 1935, to sell products therein licensed to commercial bakers for incorporation in bread and/or breadstuffs, as therein defined.

III

The duration of this license, unless otherwise terminated in accordance with the provisions of this contract, shall be until August 14, 1945, the expiration date of United States Letters Patent 1,680,818.

IV

The Licensee agrees that commencing with the date hereof and thereafter during the life of this license, it will incorporate irradiated material in all flour branded "SUNFED" made and sold by it and by its subsidiary companies operating under Paragraph XVIII hereof, for family use in its entire licensed territory.

The Licensee agrees that commencing with the date hereof and thereafter during the life of this license, it will incorporate irradiated ergosterol in all flour branded "SUNFED" made and sold by it and by subsidiary companie soperating under Paragraph XVIII hereof, for use by commercial bakers in the entire licensed territory.

V

The Licensee shall incorporate into the flours treated under this license agreement such amount of irradiated ergosterol or other irradiated material as may be mutually agreed upon by the parties hereto, and as shall be sufficient to be of material aid in the prevention of rickets. It is understood that the Licensee shall make no claim for the licensed products, in advertising or otherwise, as being curative of rickets.

VI

It is understood that during the life of this contract the Licensor shall make such biological analyses of the Licensee's flours treated under this license as produced at the Licensee's plants, as the Licensor deems necessary in order to determine the antirachitic potency thereof.

VII

The Licensee agrees to pay to the Licensor during the life of this license a royalty of per barrel of pounds of wheat flour treated and shipped by the Licensee under this license and by its subsidiary companies operating under Paragraph XVIII hereof. The royalties provided for in this clause of this agreement shall be paid quarterly within 30 days from the end of each calendar quarter during the life hereof.

Digitized by Google

VIII

The Licensee guarantees that the royalties payable to the Licensor under Paragraph VII of this license shall be not less than the following amounts:

(a) for the period March 1, 1939, to and including February 28, 1940.
(b) for the period March 1, 1940, to and including February 28, 1941.
(c) for the period March 1, 1941, to and including February 28, 1942.
(d) for the period March 1, 1942, to and including February 28, 1943.
(e) for the period March 1, 1943, to and including February 28, 1944.
(f) for the period March 1, 1944, to and including February 28, 1945.
(g) for the period March 1, 1945, to and including August 14, 1945.

It is understood and agreed that the Licensee will pay to the Licensor the above minimum annual royalties in installments equivalent to $\frac{1}{12}$th of the respective annual amounts, such installments to be paid each month during the life of this license, commencing with March 1, 1939.

IX

The Licensee shall have the right to cancel this license on March 1, 1942, and at any time thereafter upon serving on the Licensor 90 days' written notice of its election so to do.

X

The Licensee agrees that sales by it of wheat flours treated pursuant to this license (other than flour for family use) shall be made only to commercial bakers for use in the manufacture of bread and/or breadstuffs, who have entered into written contracts with the Licensee relating to the use of said flour. In addition to such provisions (not inconsistent with the provisions hereinafter set forth), as the Licensee may in its discretion incorporate therein, such contracts shall contain provisions similar to the following:

(a) A provision requiring the purchaser to use such activated wheat flour only in such manner as the Licensee shall specify in such contract.
(b) A provision prohibiting the purchaser from making extravagant or unwarranted statements in advertising with respect to the Vitamin D content of products manufactured by such purchaser, in which the herein licensed activated wheat flour is incorporated, and requiring the purchaser to secure the approval of the Licensor of all advertising material relating to such products in which the Licensor's seal or insignia, the name of the Steenbock process, Dr. Steenbock, the University of Wisconsin, or the Licensor is used.
(c) A provision requiring the purchaser properly to comply with all statutory requirements regarding the marking of articles offered by him for sale and covered by the patent licensed hereunder to the Licensee.
(d) A provision granting to the purchaser an implied license under the patent herein licensed, to use the activated wheat flours purchased from the Licensee in the manufacture of bread and/or breadstuffs, such implied license to continue only so long as such purchaser complies with all of the terms of said contract.

The form and substance of the afore-mentioned provisions of such contracts, namely, subparagraphs (a) to (d), inclusive, above, shall be subject to approval by the Licensor prior to the adoption of said contracts.

The Licensee agrees to cause to be made a bioassay at a laboratory acceptable to the Licensor, at intervals of not more than four months, of a sample of the antirachitic product of each and every commercial baking plant which may use wheat flours activated hereunder and purchased from the Licensee, in the manufacture of bread or breadstuffs, and shall send a report of the result of each such bioassay to the Licensor. In the event that the bioassays of the product of any baking plant show that the Vitamin D potency of such product is below that contemplated by this license, and by said contract, then the Licensee shall use its best efforts to cause such baking plant to modify its practice in order that its product shall thereafter have the Vitamin D potency contemplated by its contract.

Digitized by Google

The Licensee agrees that in the event any purchaser of activated wheat flours sold under this license does not comply with the afore-mentioned provisions, subparagraphs (a) to (d) inclusive, of its contract, the Licensee will within sixty (60) days after receiving written notice from the Licensor setting forth in what particulars such purchaser has failed to comply with said provisions, promptly cancel its contract with said purchaser and discontinue the delivery of activated wheat flours to such purchaser, unless within such sixty (60) day period said purchaser has corrected his practices so as to comply substantially with the conditions of said provisions.

The Licensee further agrees that it will not knowingly sell, directly or indirectly, wheat flour treated under this license agreement as a source of Vitamin D for any other product whatever (except bread and breadstuffs, as herein defined) when such other product is intended to be sold or resold on a commercial basis. In case it comes to the attention of Licensee, by notice from the Licensor or otherwise, that its said wheat flour is being so used and/or sold, the Licensee will take all reasonable steps to prevent a continuance of such use and/or sale.

Nothing herein contained shall prevent the Licensee from selling licensed activated wheat flours to jobbers for resale to commercial bakers, subject to the terms and provisions of this agreement.

XI

The Licensee shall not, without the approval of the Licensor, circulate any advertising material naming the Steenbock process, the Steenbock patent, the University of Wisconsin, the Licensor, or Dr. Steenbock, or using the Licensor's seal or insignia. No extravagant or unwarranted advertising claims shall be made by the Licensee for the products covered by this agreement and specifically attributed to Vitamin D. The Licensee shall furnish the Licensor with copies of representative advertisements of the flour in connection with which representations are made as to the Vitamin D content.

It is understood for the purpose of selecting suitable advertising material in accordance with the spirit of this Section that the parties will confer with one another and advertising counsel before any general advertising program relating to Vitamin D is adopted.

XII

The Licensee shall keep at its principal office true and particular account of all flour treated and shipped under this license agreement. At the request of the Licensor, upon reasonable notice such records shall be made available for check and audit by the Licensor or a certified public accountant in its behalf. Such records shall be preserved for at least three years.

XIII

The Licensee shall properly comply with all statutory provisions pertaining to the marking of patented articles.

At the expiration of this license agreement, the Licensee shall not thereafter in its advertising or otherwise in connection with the sale of its flours, use the name of the Licensor, the name of Dr. Steenbock or the Licensor's seal or insignia.

XIV

The Licensor shall have the right at any time to inspect and test samples of the Licensee's flours treated hereunder and to this end the Licensee agrees to furnish the Licensor, upon reasonable notice, such quantity of the flour treated under this license agreement packed ready for sale, as may be reasonably necessary for the Licensor to test the potency thereof.

XV

The Licensor shall have the right to prosecute suits for infringement of the Letters Patent by virtue of which the Licensee is operating, and the Licensee, together with other licensees under said patent as may be so obligated, shall be liable for one-half of the reasonable costs of such litigation.

The Licensor shall have the right, and it shall be its duty, to apportion equitably such one-half of the expenses of litigation among other licensees bound by their contracts to bear a portion of such expenses, but the Licensee herein shall not in any event be liable for more than its pro rata portion of such expenses based

Digitized by Google

on royalties currently accruing under Paragraphs VII and VIII hereof, and in no event shall the Licensee's aggregate liability under Paragraph XV of this agreement exceed the sum of .

The Licensor agrees to send to the Licensee within sixty (60) days after the expiration of each year during the life hereof, a statement of that portion of the preceding year's expenses of litigation which the Licensee is obligated to pay hereunder, and the Licensee agrees to pay promptly said amounts for each year, respectively.

XVI

If the royalties, or any part thereof, shall for a period of thirty days be in arrears, or in case of default by the Licensee in performing any of the agreements herein contained, the Licensor shall have, in addition to all other legal and equitable remedies it may have in regard to the enforcement of this contract, the right to revoke this license by notice in writing served upon Licensee.

XVII

The Licensee shall have no right to assign this license except with the sale of substantially its entire business.

XVIII

It is agreed that the benefits of this license shall be extended to subsidiary companies percent of whose stocks are owned by the Licensee.

XIX

The Licensee agrees that commencing with the date hereof and continuing thereafter until August 14, 1945, so long as it continues to produce and sell wheat flours containing Vitamin D under the brand "Sunfed" or otherwise for family use, and flour containing Vitamin D branded "Sunfed" or otherwise for use by commercial bakers in the manufacture of Vitamin D bread and/or breadstuffs, it will operate in accordance with the terms and conditions of this agreement, and produce such Vitamin D flours hereunder.

In witness whereof the parties have by their respective duly authorized officers set their hands hereto and caused their respective corporate seals to be affixed the day and year first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

L. M. HANKS, *Secretary.*

COMMANDER-LARABEE MILLING COMPANY,
By GUY A. THOMAS, *President.*

Attest:

P. J. WEDGE, *Assistant Secretary.*

LICENSE AGREEMENT

This agreement made this 27th day of June 1939, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for private profit (hereinafter called the "Licensor"), and LOOSE-WILES BISCUIT COMPANY, a corporation of the State of New York, having its principal office and place of business at New York, N. Y. (hereinafter called the "Licensee"),

WITNESSETH:

Whereas, the Licensor is the owner of the following United States Letters Patent:

No. 1,680,818, issued Aug. 14, 1928, "Antirachitic Product and Process,"
No. 1,871,136, issued Aug. 9, 1932, "Antirachitic Product and Process,"
No. 1,871,136, issued Aug. 9, 1932, "Antirachitic Product Essence and Process,"
No. 2,057,399, issued Oct. 13, 1936, "Antirachitic Product and Process."

Whereas the Licensee desires to secure a license under said patents to fortify crackers and other products marketed by it.

Now, therefore, in consideration of the covenants hereinafter set forth and mutually acquiesced in by the parties hereto, it is agreed:

Digitized by Google

I

The Licensor grants to the Licensee a nonexclusive license under United States Letters Patent Nos. 1,680,818, 1,871,135, 1,871,136, and 2,057,399, to purchase and use irradiated material, as hereinafter defined, for the purpose of antirachitically activating the following products of the Licensee:

CRACKERS (of the various kinds now or heretofore manufactured and sold by the cracker industry in the United States) including Whole Wheat Crackers, Graham Crackers, Bran Crackers, Cheese Crackers, Wheat Meal Crackers.

WAFERS slightly sweetened such as English Style Arrowroot Wafers; also Fruited Sandwiches and Nut Sandwiches.

ROOT MACHINE BARS such as Zed,

DROP MACHINE GOODS such as Oatmeal Wafers, subject, however, to the terms and conditions hereinafter set forth.

The phrase "irradiated material" as used in this agreement means activateable substances irradiated with ultraviolet light by the process of the herein licensed patents, and first approved by the Licensor for use by the Licensee hereunder. All irradiated material used under this license shall be purchased by the Licensee from other licensees of the Licensor licensed to sell such products in the field covered by this license. The Licensee shall have no right itself to irradiate any activateable substance with ultraviolet light, nor shall it have the right to resell or otherwise dispose of irradiated material purchased hereunder except as incorporated in the licensed products.

The term "cracker" as used herein means crackers of the various kinds now or heretofore manufactured and sold by the cracker industry in the United States. It is specifically understood that this license does not embrace bread, breadstuffs, pastry, cakes, pies, doughnuts, cookies (it being understood that none of the products licensed under Section I is considered by the parties hereto as cookies) and similar products (including rolls, buns, and biscuits) according to the ordinary significance of these products as now manufactured and sold by the bread industry in the United States. It is further understood that this license does not embrace cereal breakfast foods according to their ordinary significance to the cereal trade in the United States.

II

The duration of this license shall be for the life of United States Letters Patent No. 2,057,399.

The rights granted to the Licensee hereunder shall extend throughout the world, except for Great Britain (including North Ireland and the Isle of Man) during the life of the British Steenbock Patent No. 236,197 and except for Germany during the life of the German Steenbock Patent No. 605,960.

IV

The Licensee shall have the right to cancel this license on December 31, 1940, and as of December 31 of any year thereafter by serving upon the Licensor 90 days' prior written notice by registered mail of its election so to do.

V

For the right secured under this license, the Licensee agrees either to pay the Licensor directly or to cause to be paid to the Licensor by another licensee from whom the Licensee purchases irradiated material hereunder, during the life hereof in quarterly payments within 30 days from the end of each calendar quarter, a royalty of ——— cents per million U. S. P. units of Vitamin D used by the Licensee hereunder during the preceding calendar quarter, which royalty is in addition to the royalties provided for in the licenses heretofore given by the Licensor to manufacturers and suppliers who may supply the Licensee hereunder with irradiated material.

In addition to the foregoing royalties, the Licensee shall pay to the Licensor, as compensation for the Licensor making biological analyses of the Licensee's licensed products, the sum of $——— per year during the life hereof for each separate product activated hereunder, the first of such payments to be made upon the execution of this license, and subsequent payments at annual intervals thereafter.

VI

The Licensee agrees to incorporate in each of its licensed products sufficient irradiated material to give such products a Vitamin D potency of not less than or more than 2,000 U. S. P. Vitamin D units per pound of net weight, if any such irradiated material is used therein.

Digitized by Google

VII

No extravagant or unwarranted advertising claims with reference to Vitamin D shall be made by the Licensee for products licensed hereunder The Licensee shall not, without the approval of the Licensor, circulate any advertising material referring to or naming the Steenbock patents, the University of Wisconsin, the Licensor, Dr. Steenbock or the seal or insignia of the Licensor hereinafter referred to.

VIII

The Licensee agrees to affix in a suitable manner, upon the label of each and every package which it sells of crackers activated hereunder during the life hereof, the following seal or insignia:

{Wisconsin Alumni Research Foundation, Approved for Vitamin D upon periodic tests}

provided, however, that in the event the Vitamin D potency of the Licensee's licensed products, according to tests made by or for the Licensor should fall below standards established by the Licensor hereunder (which standards shall not be in conflict with any law, ordinance or governmental regulation), the Licensee agrees that upon 90 days' prior written notice from the Licensor, it will promptly discontinue the use of such seal and not resume its use until it has complied with said standards.

It is agreed that during the life of the licenses herein granted, such use of the aforesaid seal by the Licensee shall be without the payment of any royalty or other charge therefor to the Licensor over and above the royalties stipulated in Section V of this agreement.

The Licensee shall not, without the consent of the Licensor, use the aforesaid seal or insignia, upon labels of its products or in advertising or otherwise, after the expiration of the term of the licenses herein granted.

IX

The Licensor shall have the right at any time to inspect and test samples of the Licensee's licensed products, and to this end the Licensee agrees to furnish the Licensor upon reasonable notice such quantities of such products packed ready for sale as may be necessary for the Licensor to test the potency thereof.

X

The Licensor shall have the right to prosecute suits for infringement of the licensed patents and the right to defend suits for declaratory judgments concerning such patents. The Licensee shall properly comply with all statutory provisions pertaining to the marking of patented articles.

XI

The Licensee shall keep true accounts of all irradiated material used hereunder, which accounts shall be available for audit by the Licensor at reasonable periods.

XII

The Licensee shall not assign this license without the written consent of the Licensor.

XIII

Violation of any of the terms or conditions of this license by the Licensee shall constitute sufficient cause for revocation hereof by the Licensor upon 60 days' written notice.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By (Signed) GEORGE I. HAIGHT, *President*

Attest:
(Signed) L. M. HANKS, *Secretary.*

LOOSE-WILES BISCUIT COMPANY,
By (Signed) B. L. HUPP, *President.*

Attest:
(Signed) H. A. CLEMMER, *Assistant Secretary.*

Digitized by Google

License Agreement For Irradiation of Fluid Milk by the Use of Ultra-Violet Rays

License granted this 25th day of April 1934 by the Wisconsin Alumni Research Foundation, of Madison, Wisconsin, a Wisconsin Corporation, not for pecuniary profit, hereinafter called the Licensor,
to Abbotts Dairies, Inc., of Philadelphia, a corporation of the State of Pennsylvania hereinafter called the Licensee.

Witnesseth:

Whereas the Licensor owns or is authorized to grant licenses under United States Letters Patent Nos. 1,680,818 and 1,817,936; and

Whereas the Licensee is desirious of securing a license under said Letters Patent to increase the antirachitic qualities of milk by the direct treatment of such milk with ultra-violet rays, it is agreed:

I. The Licensee is hereby licensed to irradiate fluid milk with ultra-violet rays so as to increase the antirachitic properties of the same under said Letters Patent Nos. 1,680,818 and 1,817,936 and under all patents the Licensor may hereafter own or acquire relating to the direct irradiation of fluid milk with ultra-violet rays. Fluid milk as used in this license means the normal lacteal secretion of the cow.

II. The duration of this license shall be for the life of all patents covered hereby, unless otherwise terminated as in this contract provided.

III. This license is in all respects nonexclusive.

IV. The Licensee's rights under this license to irradiate and sell fluid milk are limited to the following territory: Philadelphia, Pennsylvania; Camden, New Jersey; and environs.

V. The Licensee shall pay to the Licensor, beginning at the date of this contract, a license fee of Dollars per month for each month that this license remains in force.

In addition to said license fee, production royalties on fluid milk irradiated and sold under this license shall be paid to the Licensor as follows:

For fluid milk irradiated and sold in the territory of this license as specified in Section IV:

------ for each quart sold from ------ to ------ quarts per day,
------ for each quart sold from ------ to ------ quarts per day,
------ for each quart sold from ------ to ------ quarts per day,
------ for each quart sold from ------ to ------ quarts per day,
------ for each quart sold from ------ to ------ quarts per day.

The Licensee may separate cream from such irradiated milk and sell the same upon payment to the Licensor of the royalties which otherwise would accrue upon the sale of the irradiated milk from which said cream is derived. For the purpose of calculating such cream royalties, irradiated milk shall be regarded as containing 4.0% butterfat.

The license fee and production royalties for each month shall be paid within twenty days after the end of each such month.

VI. The Licensee agrees to use said process and to commence the activation of its fluid milk as soon as irradiating equipment is installed in any of the Licensee's plants, and to continue the use of said process thereafter during the life of this contract. The Licensee agrees to use all reasonable business efforts to increase the sale of its irradiated fluid milk and make a diligent and good-faith effort to increase the market demand therefor. Licensee agrees to inaugurate and carry on an educational and advertising program, the object of which will be to bring the merits of the irradiated product to the attention of the medical profession and the public. The Licensor may at its option after two years from the date the Licensee begins to irradiate its milk, terminate this license if said Licensor is not satisfied that the Licensee is diligently endeavoring to increase its sale of irradiated milk.

VII. The fluid milk irradiated and sold under this license shall contain a vitamin D content that is sufficient according to the published standards of the Licensor to prevent the development of rickets when such milk is used in a normal manner as a food product. Whenever standards are prescribed by the local Board of Health which has jurisdiction of the territory covered by this contract, the Licensee shall conform to such standards. The Licensee will equip its irradiation apparatus with automatic recording devices acceptable to the Licensor for the purpose of standardizing operating conditions.

VIII. The Licensor will make such biological analyses of Licensee's irradiated milk as the Licensor deems necessary to determine the antirachitic potency thereof.

Digitized by Google

IX. Fluid milk irradiated under this license shall be sold only as fluid milk or cream, and shall not knowingly be used, or directly or indirectly sold, as a source of vitamin D for any other product whatsoever, including all forms of milk and dairy products, when such products are intended to be sold or resold on a commercial basis.

The Licensee shall not sell the fluid milk irradiated under this license to others for resale under brands not owned by the Licensee.

X. The Licensee shall not without the approval of the Licensor circulate any advertising material relating to the Licensor, the Steenbock process, the Steenbock patents, the University of Wisconsin, or Dr. Steenbock, nor shall the Licensee make any unwarranted claims for the milk so irradiated.

XI. The Licensee shall keep true accounts of all fluid milk irradiated and all such milk sold under this license, which accounts shall be available for check and audit by the Licensor at reasonable periods.

XII. The Licensor shall have the right to prosecute suits for infringement of the licensed patents.

XIII. The Licensee may cancel this license after one year from date hereof by serving ninety days' prior written notice to that effect upon the Licensor.

XIV. The Licensee shall not assign this license without the written consent of the Licensor.

XV. This agreement and each and every term hereof shall be interpreted so as not to in any manner conflict with any provision of the National Industrial Recovery Act or of the Agricultural Adjustment Act, or with any ruling of either of the Administrations under either of said Acts, or with any provision of any Code under either of said Acts under which the Licensee now is or hereafter may be operating in its distribution of fluid milk.

XVI. In the event that the average retail selling price of the Licensee's irradiated fluid milk (except special brands) for any calendar week during the term this license is above ------ per quart, then during said week the royalties to be paid by the Licensee to the Licensor upon all fluid milk irradiated by it shall be, in place of those specified in Section V hereof, amounts per quart which will bear the same ratio to the average retail selling price during said week as the existing royalty rates bear to ------ cents.

XVII. The Licensee hereby accepts this license upon the terms and conditions herein set forth and does hereby agree to comply with all the said terms and conditions. Violation of any such terms and conditions shall constitute sufficient cause for the revocation of this license upon six days' written notice.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By W. S. KIES, *Trustee.*
RALPH HORTON, *Eastern Representative.*
ABBOTTS DAIRIES, INC.,
Licensee.
By C. R. LINDBACK, *President.*

The following companies have agreements similar to that of Abbotts Dairies, Inc.:

Name	Address	Date of Contract
Alderney Dairy Company	Newark, New Jersey	March 15, 1935.
Beatrice Creamery Company	Tulsa, Oklahoma	March 6, 1934.
Bentley & ReneKens	Dunkirk, New York	October 30, 1934.
Biltmore Dairy Farms, Inc	Asheville, North Carolina	September 1, 1934.
The Borden Company	Chicago, Illinois	January 5, 1936.
The Borden Company	Detroit, Michigan	January 5, 1936.
The Borden Company	New York City	January 5, 1936.
Borden's Farm Products Company, Inc	Oxford, New York	May 1, 1934.
Bowman Dairy Company	Chicago, Illinois	February 28, 1934.
Cedar Hill Farms	Newtown, Ohio	May 16, 1935.
W. M. Evans Dairy Co., Inc	Brooklyn, New York	May 23, 1935.
Ferndale Farms, Inc	Brooklyn, New York	May 3, 1934.
Frain's Dairies	Wilmington, Delaware	May 8, 1935.
Franklin Lake Dairy	Midland Park, New Jersey	May 8, 1935.
H. P. Hood & Sons, Inc	Boston, Massachusetts	September 2, 1933.
Hunding Dairy Company	Chicago, Illinois	April 25, 1934.
Joppe's Dairy	Grand Rapids, Michigan	December 13, 1933.
A. Kristoferson, Inc	Seattle, Washington	January 15, 1934.
Michigan State College Dairy	East Lansing, Michigan	November 1, 1934.

Digitized by Google

Name	Address	Date of Contract
Mitchell Dairy	Bridgeport, Connecticut	January 5, 1936.
Portland Milk Producers Association	Portland, Oregon	March 8, 1934.
Pure White Dairy Company	Tulsa, Oklahoma	February 8, 1934.
Quality Milk Products Company	Tulsa, Oklahoma	February 21, 1934.
Rosedale Dairy Company, Inc	Norfolk, Virginia	August 1, 1934.
The J. H. Story & Son Dairy	New Haven, Connecticut	March 28, 1934.
Sidney Manzer & Sons	Chicago, Illinois	February 28, 1934.
Western Creameries, Inc	Tulsa, Oklahoma	March 3, 1934.
Ira Wilson & Sons Dairy Company	Detroit, Mich	April 6, 1934.

License Agreement for Irradiation of Fluid Milk by the Use of Ultra-Violet Rays

License granted this 15th day of November, 1939 by the Wisconsin Alumni Research Foundation, of Madison, Wisconsin, a Wisconsin Corporation, not for pecuniary profit, hereinafter called the Licensor, to Arden Farms, Inc., of Los Angeles, California, a corporation of the State of Maryland, hereinafter called the Licensee.

Witnesseth:

Whereas, the Licensor owns or is authorized to grant licenses under United States Letters Patent Nos. 1,680,818 and 1,817,936; and

Whereas, the Licensee is desirous of securing a license under said Letters Patent to increase the antirachitic qualities of milk by the direct treatment of such milk with ultra-violet rays, it is agreed:

I. The Licensee is hereby licensed to irradiate fluid milk with ultra-violet rays so as to increase the antirachitic properties of the same under said Letters Patent Nos. 1,680,818 and 1,817,936 and under all patents the Licensor may hereafter own or acquire relating to the direct irradiation of fluid milk with ultra-violet rays. Fluid milk as used in this license means the normal lacteal secretion of the cow.

II. The duration of this license shall be for the life of all patents covered hereby, unless otherwise terminated as in this contract provided.

III. This license is in all respects nonexclusive.

IV. The Licensee's rights under this license to irradiate and sell fluid milk are limited to the following territory: Los Angeles County, and the portions of Riverside and San Bernardino Counties served from Licensee's Pomona distribution plant, and the portion of Orange County served by Licensee's Santa Ana distribution plant.

V. The Licensee shall pay to the Licensor production royalties on fluid milk irradiated and sold under this license as follows:

For fluid milk irradiated and sold in the territory of this license as specified in Section IV:

_____ for each quart sold from ____ to ____ quarts per day.
_____ for each quart sold from ____ to ____ quarts per day.
_____ for each quart sold from ____ to ____ quarts per day.
_____ for each quart sold from ____ to ____ quarts per day.

The Licensee guarantees that production royalties paid to the Licensor hereunder shall be not less than _____ for each calendar month during the life of this license after the commencement by the Licensee of the sale of irradiated milk hereunder, or, in the event the Licensee has failed to commence said sale within the time specified in Section VI hereof, after the date on which the Licensee is obligated under Section VI hereof to commence said sale of irradiated milk.

The Licensee may separate cream from such irradiated milk and sell the same upon payment to the Licensor of the royalties which otherwise would accrue upon the sale of the irradiated milk from which said cream is derived. For the purpose of calculating such cream royalties, irradiated milk shall be regarded as containing 4.0% butterfat.

The production royalties for each calendar month shall be paid within twenty days after the end of each such calendar month.

VI. The Licensee agrees to proceed immediately with the installation of irradiating equipment and agrees to commence the activation of its fluid milk and sale of the same hereunder within sixty days from the date of said installation; provided, however, that in the event local and State health authorities having jurisdiction of the territory covered by this contract have not permitted the use of said process and the sale of said irradiated milk prior to the expiration of said sixty day period, then the Licensee shall not be required to commence the activation of said milk and the sale of the same until said permission is obtained.

Digitized by Google

The Licensee agrees to use all reasonable business efforts to increase the sale of its irradiated fluid milk and to make a diligent and good faith effort to increase the market demand therefor. Licensee agrees to inaugurate and carry on an educational and advertising program, the object of which will be to bring the merits of the irradiated product to the attention of the medical profession and the public. The Licensor may at its option after two years from the date the Licensee begins to irradiate its milk, terminate this license if said Licensor is not satisfied that the Licensee is diligently endeavoring to increase its sale of irradiated milk.

VII. The fluid milk irradiated and sold under this license shall contain a vitamin D content that is sufficient according to the published standards of the Licensor to prevent the development of rickets when such milk is used in a normal manner as a food product. Whenever standards are prescribed by the local Board of Health which has jurisdiction of the territory covered by this contract, the Licensee shall conform to such standards. The Licensee will equip its irradiation apparatus with automatic recording devices acceptable to the Licensor for the purpose of standardizing operating conditions.

VIII. The Licensee agrees to have made at its own expense biological assays of its irradiated milk as and in the manner prescribed by the local Board of Health having jurisdiction of the territory covered by this contract, or, in the absence of regulations of such Board of Health relating to such biological assays, as and in the manner prescribed by the Licensor; provided, however, that in no event shall there be less than four biological assays made per year of the Licensee's irradiated milk during the life of this license. The Licensor reserves the right to make at its own expense such additional biological assays of the Licensee's irradiated milk as the Licensor deems necessary.

IX. Fluid milk irradiated under this license shall be sold only in sealed containers of a maximum fluid content of one quart per container and shall be sold only as fluid milk or cream, and shall not knowingly be used, or directly or indirectly sold, as a source of vitamin D for any other product whatsoever, including all forms of milk and dairy products, when such products are intended to be sold or resold on a commercial basis.

The Licensee shall not sell the fluid milk irradiated under this license to others for resale under brands not owned by the Licensee.

X. The Licensee shall not without the approval of the Licensor circulate any advertising material of any sort whatsoever relating to milk treated under this license or relating to the Licensor, the Steenbock process, the Steenbock patents, the University of Wisconsin, or Dr. Steenbock, nor shall the Licensee make any unwarranted claims for the milk so irradiated.

XI. The Licensee shall keep true accounts of all fluid milk irradiated and all such milk sold under this license, which accounts shall be available for check and audit by the Licensor at any time.

XII. The Licensor shall have the right to prosecute suits for infringement of the licensed patents.

XIII. The Licensee may cancel this license at any time after one year from the date the Licensee commences the sale of irradiated milk hereunder, by serving ninety (90) days' prior written notice to that effect upon the Licensor.

XIV. The Licensee shall not assign this license without the written consent of the Licensor.

XV. This agreement and each and every term hereof shall be interpreted so as not to in any manner conflict with any provision of the Agricultural Adjustment Act, or with any ruling of the Administration under said Act, or with any regulation under said Act under which the Licensee now is or hereafter may be operating in its distribution of fluid milk.

XVI. In the event that the average retail selling price of the Licensee's irradiated fluid milk (except special brands) for any calendar week during the term of this license is above per quart, then during said week the royalties to be paid by the Licensee to the Licensor upon all fluid milk irradiated by it shall be, in place of those specified in Section V hereof, amounts per quart which will bear the same ratio to the average retail selling price during said week as the existing royalty rates bear to cents.

XVII. The Licensee hereby accepts this license upon the terms and conditions herein set forth and does hereby agree to comply with all the said terms and conditions. Violation of any such terms and conditions shall constitute sufficient cause for the revocation of this license upon sixty days' written notice.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By L. D. BARNEY.

ARDEN FARMS, INC.,
Licensee.
By H. E. MCGEE, *Secy.*

Digitized by Google

The following companies have agreements similar to that of Arden Farms, Inc.:

Name	Address	Date of contract
Beatrice Creamery Company	Denver, Colorado	October 1, 1935.
Beverly Dairies, Ltd	Glendale, California	June 1, 1936.
Carlson-Frink Company	Denver, Colorado	October 1, 1935.
Castanea Dairy Company	Trenton, New Jersey	September 15, 1936.
Clover Leaf Dairy Company	Racine, Wisconsin	October 1, 1935.
Wm. Colteryahn & Sons, Company	Pittsburgh, Pennsylvania	December 15, 1936.
Durling Farms, Inc	White House, New Jersey	March 16, 1936.
Fischl Ice Cream & Dairy Company	Manitowoc, Wisconsin	October 1, 1935.
General Ice Cream Corp	Schenectady, New York	April 1, 1937.
Golden Guernsey Co-op	Milwaukee, Wisconsin	October 1, 1935.
Iowana Farms	Davenport, Iowa	October 1, 1935.
Isenekers Dairy, Inc	Rome, New York	September 1, 1937.
Kleinheinz Dairy Company	Wausau, Wisconsin	October 1, 1935.
Modern Dairy Company	La Crosse, Wisconsin	October 1, 1935.
O'Dowd's Dairy	Caldwell, New Jersey	October 1, 1935.
Philadelphia Dairy Products Company, Inc.	Philadelphia, Pa	July 1, 1939.
Pine State Creamery Co	Raleigh, North Carolina	February 22, 1936.
Port Murray Dairy Co. Inc	Port Murray, N. J	November 19, 1935.
Raritan Valley Farms, Inc	Somerville, New Jersey	December 1, 1936.
Strawberry Hill Dairy, Inc	Norwalk, Connecticut	August 1, 1937.
Stueber Dairy Company	Wausau, Wisconsin	October 1, 1935.
Sheboygan Dairy Products Company	Sheboygan, Wisconsin	October 1, 1935.
West End Dairy Company	Charleston, South Carolina	February 10, 1936.
Wood Brook Farms	Metuchen, New Jersey	November 26, 1935.

License Agreement for Irradiation of Fluid Milk by the Use of Ultra-Violet Rays

License granted this 1st day of October 1935 by the Wisconsin Alumni Research Foundation, of Madison, Wisconsin, a Wisconsin Corporation, not for pecuniary profit, hereinafter called the Licensor, to Adohr Milk Farms, of Los Angeles, California, a corporation of the State of California hereinafter called the Licensee.

Witnesseth: Whereas, the Licensor owns or is authorized to grant licenses under United States Letters Patent Nos. 1680818 and 1817936; and

Whereas, the Licensee is desirous of securing a license under said Letters Patent to increase the antirachitic qualities of milk by the direct treatment of such milk with ultraviolet rays, it is agreed:

I. The Licensee is hereby licensed to irradiate fluid milk with ultraviolet rays so as to increase the antirachitic properties of the same under said Letters Patent Nos. 1680818 and 1817936 and under all patents the Licensor may hereafter own or acquire relating to the direct irradiation of fluid milk with ultraviolet rays. Fluid milk as used in this license means the normal lacteal secretion of the cow.

II. The duration of this license shall be for the life of all patents covered hereby, unless otherwise terminated as in this contract provided.

III. This license is in all respects nonexclusive.

IV. The Licensee's rights under this license to irradiate and sell fluid milk are limited to the following territory: Metropolitan Los Angeles.

V. The Licensee shall pay to the Licensor production royalties on fluid milk irradiated and sold under this license as follows:

For fluid milk irradiated and sold in the territory of this license as specified in Section IV:

____ for each quart sold from 0 to ____ quarts per day,
____ for each quart sold from ____ to ____ quarts per day,
____ for each quart sold from ____ to ____ quarts per day,
____ for each quart sold from ____ to ____ quarts per day,
____ for each quart sold from ____ to ____ quarts per day.

The Licensee guarantees that production royalties paid to the Licensor hereunder shall be not less than for each calendar month during the life of this license after the commencement by the Licensee of the sale of irradiated milk hereunder, or in the event the Licensee has failed to commence said sale within the time specified in Section VI hereof, after the date on which the Licensee is obligated under Section VI hereof to commence said sale of irradiated milk.

The Licensee may separate cream from such irradiated milk and sell the same upon payment to the Licensor of the royalties which otherwise would accrue upon the sale of the irradiated milk from which said cream is derived. For the purpose

Digitized by Google

of calculating such cream royalties, irradiated milk shall be regarded as containing 4.0% butterfat.

The production royalties for each calendar month shall be paid within twenty days after the end of each such calendar month.

VI. The Licensee agrees to proceed immediately with the installation of irradiating equipment and agrees to commence the activation of its fluid milk and sale of the same hereunder within sixty days from the date of said installation; provided, however, that in the event local and State health authorities having jurisdiction of the territory covered by this contract have not permitted the use of said process and the sale of said irradiated milk prior to the expiration of said sixty-day period, then the Licensee shall not be required to commence the activation of said milk and the sale of the same until said permission is obtained. The Licensee agrees to use all reasonable business efforts to increase the sale of its irradiated fluid milk and to make a diligent and good-faith effort to increase the market demand therefor. Licensee agrees to inaugurate and carry on an educational and advertising program, the object of which will be to bring the merits of the irradiated product to the attention of the medical profession and the public. The Licensor may at its option after two years from the date the Licensee begins to irradiate its milk, terminate this license if said Licensor is not satisfied that the Licensee is diligently endeavoring to increase its sale of irradiated milk.

VII. The fluid milk irradiated and sold under this license shall contain a vitamin D content that is sufficient according to the published standards of the Licensor to prevent the development of rickets when such milk is used in a normal manner as a food product. Whenever standards are prescribed by the local Board of Health which has jurisdiction of the territory covered by this contract, the Licensee shall conform to such standards. The Licensee will equip its irradiation apparatus with automatic recording devices acceptable to the Licensor for the purpose of standardizing operating conditions.

VIII. The Licensee agrees to have made at its own expense biological assays of its irradiated milk as and in the manner prescribed by the local Board of Health having jurisdiction of the territory covered by this contract, or, in the absence of regulations of such Board of Health relating to such biological assays, as and in the manner prescribed by the Licensor; provided, however, that in no event shall there be less than four biological assays made per year of the Licensee's irradiated milk during the life of this license. The Licensor reserves the right to make at its own expense such additional biological assays of the Licensee's irradiated milk as the Licensor deems necessary.

IX. Fluid milk irradiated under this license shall be sold only in sealed containers of a maximum fluid content of one quart per container and shall be sold only as fluid milk or cream, and shall not knowingly be used, or directly or indirectly sold, as a source of vitamin D for any other product whatsoever, including all forms of milk and dairy products, when such products are intended to be sold or resold on a commercial basis.

The Licensee shall not sell the fluid milk irradiated under this license to others for resale under brands not owned by the Licensee.

X. The Licensee shall not without the approval of the Licensor circulate any advertising material of any sort whatsoever relating to milk treated under this license or relating to the Licensor, the Steenbock process, the Steenbock patents, the University of Wisconsin, or Dr. Steenbock, nor shall the Licensee make any unwarranted claims for the milk so irradiated.

XI. The Licensee shall keep true accounts of all fluid milk irradiated and all such milk sold under this license, which accounts shall be available for check and audit by the Licensor at any time.

XII. The Licensor shall have the right to prosecute suits for infringement of the licensed patents.

XIII. The Licensee may cancel this license after one year from date hereof by serving ninety days' prior written notice to that effect upon the Licensor.

XIV. The Licensee shall not assign this license without the written consent of the Licensor.

XV. This agreement and each and every term hereof shall be interpreted so as not to in any manner conflict with any provision of the Agricultural Adjustment Act, or with any ruling of the Administration under said Act, or with any regulation under said Act under which the Licensee now is or hereafter may be operating in its distribution of fluid milk.

XVI. In the event that the average retail selling price of the Licensee's irradiated fluid milk (except special brands) for any calendar week during the term of this license is above per quart, then during said week the royalties to be paid by the Licensee to the Licensor upon all fluid milk irradiated by it shall be, in

Digitized by Google

place of those specified in Section V hereof, amounts per quart which will bear the same ratio to the average retail selling price during said week as the existing royalty rates bear to cents.

XVII. The Licensee hereby accepts this license upon the terms and conditions herein set forth and does hereby agree to comply with all the said terms and conditions. Violation of any such terms and conditions shall constitute sufficient cause for the revocation of this license upon sixty days' written notice.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By L. M. HANKS, *Sec'y.*
H. L. RUSSELL
ADOHR MILK FARMS, *Licensee.*
By H. S. WAKEFIELD, *Vice President.*

The following companies have agreements similar to that of Adohr Milk Farms:

Name	Address	Date of Contract
The Borden Company	Sacramento, California	January 5, 1936.
The Borden Company	Los Angeles, California	June 1, 1936.
Borden's Dairy Delivery Company, Inc.	Sacramento, California	December 31, 1935.
Dairy Specialties, Inc	Chicago, Illinois	April 1, 1938.
Carrigan's Niagara Dairy Company	Niagara Falls, New York	December 1, 1935.
Clover Creamery Company, Inc	Roanoke, Virginia	December 1, 1935.
Foland's Dairy	Bridgeport, Connecticut	January 22, 1936.
The Gardner Creamery, Inc	Gardner, Massachusetts	December 1, 1935.
Harris Cream Top Milk Company	Houston, Texas	October 1, 1935.
W. D. F. Hayden Dairy Company	Dover, New Hampshire	December 1, 1935.
Kitsap Dairymen's Association	Bremerton, Washington	October 1, 1935.
F. B. Mallory, Inc	Springfield, Massachusetts	December 1, 1935.
H. A. McDonald Creamery Company	Detroit, Michigan	October 1, 1935.
Medosweet Dairies, Incorporated	Tacoma, Washington	October 1, 1935.
Menzie Dairy Company	Pittsburgh, Pennsylvania	December 1, 1935.
Millside Farms, Inc	Riverside, New Jersey	December 1, 1935.
Pevely Dairy Company	St. Louis, Missouri	October 31, 1935.
Producers Milk Company	Cleveland, Ohio	October 1, 1935.
Qualitee Dairy Products Company	San Diego, California	October 1, 1935.
Richmond Dairy Company	Richmond, Virginia	December 1, 1935.
Riverview Damascus Milk Company	Portland, Oregon	October 1, 1935.
Rosebud Creamery Company	Detroit, Michigan	November 22, 1935.
Scholl Dairy Company	Michigan City, Indiana	October 1, 1935.
Thompson's Dairy, Inc	Washington, D. C	December 1, 1935.
Torrington Creamery, Inc	Torrington, Connecticut	December 1, 1935.
Wordin & Sons (Fulton Park Dairy)	Hillsdale, Oregon	October 1, 1935.
Whiting Milk Company	Boston, Massachusetts	February 16, 1939.

LICENSEE AGREEMENT

For Irradiation of Fluid Milk by the Use of Ultraviolet Rays

License granted this 1 day of January, 1936, by the WISCONSIN ALUMNI RESEARCH FOUNDATION, of Madison, Wisconsin, a Wisconsin Corporation, not for pecuniary profit, hereinafter called the Licensor, to Annette's Dairy, of Savannah, Georgia, a partnership of the State of Georgia hereinafter called the Licensee.

WITNESSETH:

Whereas, the Licensor owns or is authorized to grant licenses under United States Letters Patent Nos. 1,680,818 and 1,817,936; and

Whereas, the Licensee is desirous of securing a license under said Letters Patent to increase the antirachitic qualities of milk by the direct treatment of such milk with ultraviolet rays, it is agreed:

I. The Licensee is hereby licensed to irradiate fluid milk with ultraviolet rays so as to increase the antirachitic properties of the same under said Letters Patent Nos. 1,680,818 and 1,817,936 and under all patents the Licensor may hereafter own or acquire relating to the direct irradiation of fluid milk with ultraviolet rays. Fluid milk as used in this license means the normal lacteal secretion of the cow.

II. The duration of this license shall be for the life of all patents covered hereby, unless otherwise terminated as in this contract provided.

III. This license is in all respects non-exclusive.

IV. The Licensee's rights under this license to irradiate and sell fluid milk are limited to the following territory: Savannah, Georgia.

V. The Licensee shall pay to the Licensor a production royalty of per quart of fluid milk irradiated and sold per day under this license in the territory specified in Section IV hereof.

Digitized by Google

The Licensee guarantees that production royalties paid to the Licensor hereunder shall be not less than for each calendar month during the life of this license after the commencement by the Licensee of the sale of irradiated milk hereunder, or, in the event the Licensee has failed to commence said sale within the time specified in Section VI hereof, after the date on which the Licensee is obligated under Section VI hereof to commence said sale of irradiated milk.

The Licensee may separate cream from such irradiated milk and sell the same upon payment to the Licensor of the royalties which otherwise would accrue upon the sale of the irradiated milk from which said cream is derived. For the purpose of calculating such cream royalties, irradiated milk shall be regarded as containing 4.0% butterfat.

The production royalties for each calendar month shall be paid within twenty days after the end of each such calendar month.

VI. The Licensee agrees to proceed immediately with the installation of irradiating equipment and agrees to commence, within sixty (60) days from the date of said installation, and to continue thereafter during the life of this license, the activation and sale of all fluid milk of all grades and price ranges, both wholesale and retail, to be distributed by the Licensee in sealed containers pursuant to Section IX hereof; provided, however, that in the event local and State health authorities having jurisdiction of the territory covered by this contract have not permitted the use of said process and the sale of said irradiated milk prior to the expiration of said sixty (60) day period, then the Licensee shall not be required to commence the activation of said milk and the sale of the same until said permission is obtained. The Licensee agrees to use all reasonable business efforts to increase the sale of its irradiated fluid milk and to make a diligent and good-faith effort to increase the market demand therefor. Licensee agrees to inaugurate and carry on an educational and advertising program, the object of which will be to bring the merits of the irradiated product to the attention of the medical profession and the public. The Licensor may at its option after two years from the date the Licensee begins to irradiate its milk, terminate this license if said Licensor is not satisfied that the Licensee is diligently endeavoring to increase its sale of irrad ated milk.

VII. The fluid milk irradiated and sold under this license shall contain a vitamin D content that is sufficient according to the published standards of the Licensor to prevent the development of rickets when such milk is used in a normal manner as a food product. Whenever standards are prescribed by the local Board of Health which has jurisdiction of the territory covered by this contract, the Licensee shall conform to such standards. The Licensee will equip its irradiation apparatus with automatic recording devices acceptable to the Licensor for the purpose of standardizing operating conditions.

VIII. The Licensee agrees to have made at its own expense biological assays of its irradiated milk as and in the manner prescribed by the local Board of Health having jurisdiction of the territory covered by this contract, or, in the absence of regulations of such Board of Health relating to such biological assays, as and in the manner prescribed by the Licensor; provided, however, that in no event shall there be less than four biological assays made per year of the Licensee's irradiated milk during the life of this license. The Licensor reserves the right to make at its own expense such additional biological assays of the Licensee's irradiated milk as the Licensor deems necessary.

IX. Fluid milk irradiated under this license shall be sold only in sealed containers of a maximum fluid content of one quart per conatiner and shall be sold only as fluid milk or cream, and shall not knowingly be used, or directly or indirectly sold, as a source of vitamin D for any other product whatsoever, including all forms of milk and dairy products, when such products are intended to be sold or resold on a commercial basis.

The Licensee shall not sell the fluid milk irradiated under this license to others for resale under brands not owned by the Licensee.

X. The Licensee shall not without the approval of the Licensor circulate any advertising material of any sort whatsoever relating to milk treated under this license or relating to the Licensor, the Steenbock process, the Steenbock patents, the University of Wisconsin, or Dr. Steenbock, nor shall the Licensee make any unwarranted claims for the milk so irradiated.

XI. The Licensee shall keep true accounts of all fluid milk irradiated and all such milk sold under this license, which accounts shall be available for check and audit by the Licensor at any time.

XII. The Licensor shall have the right to prosecute suits for infringement of the licensed patents.

Digitized by Google

XIII. The Licensee may cancel this license at any time after one year from the date the Licensee commences the sale of irradiated milk hereunder, by serving ninety (90) days' prior written notice to that effect upon the Licensor.

XIV. The Licensee shall not assign this license without the written consent of the Licensor.

XV. This agreement and each and every term hereof shall be interpreted so as not to in any manner conflict with any provision of the Agricultural Adjustment Act, or with any ruling of the Administration under said Act, or with any regulation under said Act under which the Licensee now is or hereafter may be operating in its distribution of fluid milk.

XVI. In the event that the average retail selling price of the Licensee's irradiated fluid milk (except special brands) for any calendar week during the term of this license is above per quart, then during said week the royalties to be paid by the Licensee to the Licensor upon all fluid milk irradiated by it shall be, in place of those specified in Section V hereof, amounts per quart which will bear the same ratio to the average retail selling price during said week as the existing royalty rates bear to cents.

XVII. The Licensee hereby accepts this license upon the terms and conditions herein set forth and does hereby agree to comply with all the said terms and conditions. Violation of any such terms and conditions shall constitute sufficient cause for the revocation of this license upon sixty days' written notice.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By W. S. KIES, *Trustee.*
RALPH HORTON.

ANNETTES DAIRY, *Licensee.*
By ERNEST C. BULL.

The following companies have agreements similar to that of Annette's Dairy:

Name	Address	Date of contract
Blossom Dairy Company	Charleston, West Virginia	October 1, 1935.
David Buttrick Company	Arlington, Massachusetts	April 1, 1939.
Clover Leaf Harris Dairy	Salt Lake City, Utah	October 1, 1935.
Lehigh Valley Cooperative Farmers	Allentown, Pennsylvania	October 1, 1936.
Longview Farm	Lee's Summit, Missouri	February 15, 1935.
Old Tavern Farm, Inc	Portland, Maine	January 1, 1936.
Producers Creamery (Berrien County Milk Producers).	Benton Harbor, Michigan	October 1, 1935.
Rochester Dairy Company	Rochester, Minnesota	October 1, 1935.
Valley Bell Dairy Company	Charleston, West Virginia	October 1, 1935.

LICENSE AGREEMENT

License granted this nineteenth day of December 1939, by the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin Corporation not for pecuniary profit, hereinafter called the Licensor, to WEST HAVEN CREAMERY, INC., of West Haven, Conn., hereinafter called the Licensee,

WITNESSETH:

Whereas the Licensor is the owner of United States Letters Patent No. 1,680,818, issued August 14, 1928, relating to antirachitic products and processes, and other patents and applications for patents relating to the same;

Whereas the Licensor has granted a license to STANDARD BRANDS INCORPORATED, authorizing said company, exclusively, to activate dried yeast under said patented process, but to sell the same only to other Licensees of the Licensor, when said yeast is intended for use in the manner herein licensed;

Whereas the Licensee is desirous of securing a license under said Letters Patent to increase the antirachitic qualities of milk by the feeding of irradiated dried yeast to cows;

Now, therefore, in consideration of the premises and the sum of for each cow in a producing herd of not more than cows, the receipt whereof is hereby acknowledged, the Licensor has licensed and empowered, and by these

Digitized by Google

presents does license and empower the Licensee to purchase from STANDARD BRANDS INCORPORATED, dried yeast antirachitically activated under said Letters Patent and other patents, upon the following terms and conditions:

First: The Licensee shall buy and use such yeast for no other purpose than that of feeding cows to impart antirachitic qualities to milk.

Second: This License shall expire one year from the date hereof.

Third: The Licensee agrees to feed such irradiated dried yeast at the average daily ration shown in schedule attached hereto and made a part thereof, until such time as biological tests indicate that a different amount may be fed to impart a potency of not less than approximately 430 U. S. P. Vitamin D Units per quart of milk, and Licensee will cause to be made such biological tests as may be necessary.

The Licensee shall keep a record of all such activated yeast used and the number of cows fed and the Licensor shall have the right at any time to inspect such records, as well as the dairy, plant, or farm of the Licensee. Licensor shall also have the right to test the milk activated under this License, and the Licensee will furnish to the Licensor, upon request, free of charge, the necessary samples for this purpose.

Fourth: The Licensee shall not sell any of its antirachitically activated milk to others for use or incorporation in any other marketed product when Vitamin D or antirachitic claims are made or intended to be made for such other marketed product.

Fifth: The activated yeast purchased by Licensee pursuant to this License shall not be resold or otherwise used except for feeding the same to the Licensee's animals, pursuant to the conditions of this license.

SIXTH: The Licensee shall not without the approval of the Licensor circulate any advertising material relating to the Licensor, the Steenbock process, the Steenbock patents, and University of Wisconsin or Dr. Steenbock, nor shall Licensee make any unwarranted claims for the milk so produced.

SEVENTH: The Licensee shall not assign this License without the written consent of the Licensor.

EIGHTH: Licensee hereby accepts the said License upon the terms and conditions herein set forth and does hereby agree to comply with all the said terms and conditions. Violation of any of such terms and conditions shall constitute sufficient cause for the revocation of this license forthwith.

Dated December 19, 1939.

Expires December 18, 1940.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By L. D. BARNEY.

Accepted:

WEST HAVEN CREAMERY, INC.,
Licensee.
CHRISTIAN M. SMITH, *Treas.*

Approved:

STANDARD BRANDS INCORPORATED,
By O. B. BRIGGS.

Amount of irradiated yeast (type 18–C) to be fed at different levels of vitamin D milk production and approximate cost per quart containing 430 U. S. P. Units

Average daily milk production per cow (pounds)	Amount of yeast required daily (average per cow)	Approximate yeast cost per quart of milk	Average daily milk production per cow (pounds)	Amount of yeast required daily (average per cow)	Approximate yeast cost per quart of milk
	Ounces	*Cents*		*Ounces*	*Cents*
Up to 20	1¾		41 to 45	3¼	
21 to 25	2¼		46 to 50	3½	
26 to 30	2½		51 to 55	4	
31 to 35	2¾		56 to 60	4¼	
36 to 40	3				

Digitized by Google

The following companies have agreements similar to that of West Haven Creamery, Inc.:

Name	Address	Date of Contract
Best Dairies	Mobile, Alabama	August 10, 1939.
Fairview Dairy	Tucson, Arizona	September 3, 1939.
Arden Farms, Inc	El Monte, California	November 26, 1939.
Roger Jessup Certified Farm	Glendale, California	October 30, 1939.
Adohr Milk Farms	Los Angeles, California	October 25, 1939.
Arden Farms, Inc	San Diego, California	November 2, 1939.
Excelsior Creamery, Ltd	Santa Ana, California	November 23, 1939.
Sinton Dairy Company	Colorado Springs, Colorado	March 20, 1939.
Wood Ford Farm	Avon, Connecticut	July 21, 1939.
Hillcrest Farm	Bridgeport, Connecticut	August 7, 1939.
Osborndale Farm	Derby, Connecticut	August 15, 1939.
Preston J. Davenport	Litchfield, Connecticut	February 20, 1939.
Cold Spring Farm	Milford, Connecticut	March 9, 1939.
Ridgewood Farm Dairy, Inc	New Haven, Connecticut	February 28, 1939.
Knudsen Brothers	North Haven, Connecticut	July 19, 1939.
West Haven Creamery, Inc	West Haven, Connecticut	December 19, 1939.
Brockwood Farm	Greenville, Delaware	February 6, 1939.
Forman's Sanitary Dairy, Inc	Fort Lauderdale, Florida	October 9, 1939.
Farway Dairy, Inc	Hollywood, Florida	October 3, 1939.
Florida Milk Company, Inc	St. Petersburg, Florida	March 31, 1939.
Hood's Dairy	St. Petersburg, Florida	July 26, 1939.
Poinsetta Dairy Products, Inc	Tampa, Florida	August 14, 1939.
Tampa Stock Farms Dairy	Tampa, Florida	Jnauary 15, 1939.
Georgia Carolina Dairies	Augusta, Georgia	August 16, 1939.
Haskell's Dairies	Augusta, Georgia	May 1, 1939.
Brooks Dairy "The Elms"	Burlington, Iowa	March 29, 1939.
Model Dairy Farms	Davenport, Iowa	July 27, 1939.
Blue Grass Farm Dairy	Fort Madison, Iowa	November 10, 1939.
Acme Holstein Dairy	Junction City, Kansas	December 11, 1939.
Bartlett Farm	Wichita, Kansas	January 4, 1939.
Springdale Farms	Anchorage, Kentucky	January 19, 1939.
Oakhurst Dairy	Portland, Maine	April 10, 1939.
Presumpscot Farm	Westbrook, Maine	December 3, 1938.
Martin Showalter	Hagerstown, Maryland	November 30, 1939.
Dutchland Farms, Inc	Brockton, Massachusetts	October 28, 1939.
H. P. Hood & Sons, Inc	Charlestown, Mass	June 6, 1939.
A. R. Parker Co	East Bridgewater, Mass	April 1, 1939.
Waveney Farm	Framingham, Massachusetts	September 13, 1939.
Phelps Farm	Hadley, Massachusetts	June 1, 1939.
Cloverleaf Dairy	Haverhill, Massachusetts	November 15, 1939.
Wason-McDonald Company	Haverhill, Massachusetts	December 25, 1939.
Weiler-Sterling Farms Co	Jamaica Plain, Mass	August 6, 1939.
High Lawn Farm	Lenox, Massachusetts	July 17, 1939.
Frates Dairy Company	New Bedford, Mass	January 25, 1939.
Cloverluck Farm	Peppereil, Mass	November 16, 1939.
Nook Farm Corporation	Plymouth, Massachusetts	July 2, 1939.
Twin Maple Farm	Saxonville, Mass	July 3, 1939.
Beattie's Dairy	S. Hadley Falls, Mass	December 17, 1939.
Alta Crest Farms, Inc	Spencer, Massachusetts	August 11, 1939.
Socquet's Hillside Farm	Turner Falls, Mass	January 23, 1939.
Eldroot Farm, Inc	Uxbridge, Massachusetts	December 9, 1939.
Quon-Quont Stock Farm	Whately, Massachusetts	March 8, 1939.
Hillcrest Dairy, Inc	Worcester, Massachusetts	May 29, 1939.
Wawonaissa Farm	Worcester, Massachusetts	December 8, 1939.
Ira Wilson & Sons Dairy Co	Detroit, Michigan	March 13, 1939.
Van Hoosen Farm	Rochester, Michigan	November 11, 1939.
Romulus Farm Dairy	Romulus, Michigan	June 19, 1939.
Belle Vista Farms	Ypsilanti, Michigan	February 26, 1939.
Springhill Dairy	Duluth, Minnesota	July 28, 1939.
Adams Dairy Farm	Blue Springe, Missouri	February 16, 1939.
Ellswood Guernsey Farm	Independence, Missouri	July 13, 1939.
Country Club Dairy Co	Kansas City, Missouri	November 29, 1939.
Longview Farm	Lee's Dummit, Missouri	February 14, 1939.
Concord Dairy, Inc	Concord, New Hampshire	November 12, 1939.
Boyd, W. T. & Son	Nashua, New Hampshire	March 20, 1939.
Charles P. Hayward	Nashua, New Hampshire	December 8, 1939.
Hampshire Hills Farms Co	Wilton, New Hampshire	June 2, 1939.
Holly Ravine Farm Dairies	Haddonfield, New Jersey	January 16, 1939.
The Noe Farm, Inc	Madison, New Jersey	April 19, 1939.
Walker Gordon Laboratory Co., Inc	Plainsboro, New Jersey	June 1, 1939.
Terwilleger & Wakefield, Inc	Ridgewood, New Jersey	September 30, 1939.
Raritan Valley Dairy Farms, Inc	Somerville, New Jersey	April 20, 1939.
Arden Farm Dairy Company	Arden, New York	June 9, 1939.
Auburn Guernsey Farms, Inc	Auburn, New York	September 9, 1939.
Carwytham Farm	Bridgehampton, New York	January 2, 1930.
Gates Homestead Farm	Chittenango, New York	March 31, 1939.
Crocker Farms	Cortland, New York	January 5, 1940.
Daisy Dairy, Inc	Glens Falls, New York	November 20, 1939.
W. R. Quinby Dairy	Hamburg, New York	September 6, 1939.
Willow Brook Guernsey Farm	Huntington, L. I., N. Y	April 17, 1939.
Rockwell Springs Dairy	Nedrow, New York	April 30, 1939.

Digitized by Google

Name	Address	Date of Contract
Sheffield Farms Company, Inc.	New York, New York	May 5, 1939.
Holland Dairy Farms	Oriskany, New York	June 12, 1939.
J. L. Atwood (Atwood Orchards)	Plattsburg, New York	September 4, 1939.
Branglebrink Farm	St. James, L. I., N. Y.	November 11, 1939.
Schiller Park Dairy	Syracuse, New York	November 15, 1939.
Edwin Schwenk, Schwenk Dairy	Southampton, L. I., N. Y.	February 24, 1939.
Mountrose Dairy Co.	Akron, Ohio	March 23, 1939.
Waddell Dairy	Alliance, Ohio	May 18, 1939.
French-Bauer, Inc	Cincinnati, Ohio	April 29, 1939.
Opekasit Farms, Inc.	Glendale, Ohio	May 3, 1939.
Henry Meyer & Sons	Lockland, Ohio	October 11, 1939.
Pine Hill Stock Farm	Sharonville, Ohio	May 2, 1939.
Foster & Gelwick	Bartlesville, Oklahoma	April 20, 1939.
Oblander Guernsey Dairy	Enid, Oklahoma	December 30, 1939.
Alpenrose Dairy	Portland, Oregon	May 23, 1939.
I. C. S. Certified Dairy	Dalton, Pennsylvania	April 23, 1939.
Greenwood Dairies	Hulmerville, Pennsylvania	March 11, 1939.
Louden Hill Farm	South Montrose, Pa	December 13, 1939.
Fairoaks Farm	Saylesville, R. I	August 1, 1939.
Jackson & Haines Dairy	Rapid City, South Dakota	April 8, 1939.
Crescent Creamery Co., Inc.	Sioux Falls, S. D	December 6, 1939.
V. A. Smart Dairy	Beaumont, Texas	November 22, 1939.
Price's Dairy Company	El Paso, Texas	March 28, 1939.
The Phenix Dairy	Houston, Texas	June 12, 1939.
Phenix Holstein Baby Milk Dairy	Houston, Texas	February 15, 1939.
Shaw Hospital Dairy	Marlin, Texas	May 17, 1939.
Sunshine Ranch (Jim Maverick)	San Antonio, Texas	May 7, 1939.
Lebrack-Ferguson Dairy Prods. Co.	Wichita Falls, Texas	April 7, 1939.
Fillmore Farms, Inc.	Bennington, Vermont	October 26, 1939.
Cedardale Dairy	Rutland, Vermont	September 1, 1939.
Bayville Farms	Lynnhaven, Virginia	February 20, 1939.
Birtcherd Certified Dairy	Norfolk, Virginia	February 27, 1939.
Pine Grove Dairy Farm	Portsmouth, Virginia	September 14, 1939.
Smith Brothers Dairy	Kent, Washington	June 21, 1939.
Meadow Lark Dairy (Capitol City Creamery).	Olympia, Washington	January 31, 1939.
Sanitary Infant Dairy	Puyallup, Washington	May 29, 1939.
Middale Guernsey Dairy	Ridgefield, Washington	April 26, 1939.
Arden Farms Company	Seattle, Washington	December 14, 1939.
Carnation Company	Seattle, Washington	June 18, 1939.
Golden Arrow Farms, Inc	Seattle, Washington	November 14, 1939.
Dickey's Dairy	Huntington, West Va.	April 16, 1939.
Dougan Guernsey Farm Dairy, Inc	Beloit, Wisconsin	March 5, 1939.
Corium Farms, Inc.	Fond du Lac, Wisconsin	January 8, 1939.
Luxerin Farm	Fond du Lac, Wisconsin	January 3, 1939.
Ridgehurst Dairy	Fort Atkinson, Wisconsin	April 17, 1939.
Upanatem Farm	Foxboro, Wisconsin	May 2, 1939.
Brook Hill Farm, Inc.	Genesee Depot, Wisconsin	April 13, 1939.
Arbuthnot Dairy	Janesville, Wisconsin	December 30, 1938.
Bowman Dairy	Madison, Wisconsin	January 8, 1939.
Kennedy, Drs. T. F. and G.	Madison, Wisconsin	April 8, 1939.
Sunny Croft Dairy, Mr. Theron Ridge	Monroe, Wisconsin	December 4, 1939.
Meadow Springs Farm	Peebles, Wisconsin	February 25, 1939.
Wallner, Dr. A	Watertown, Wisconsin	September 16, 1939.
Keystone Farms	Waukesha, Wisconsin	May 17, 1939.
Wern Farms	Waukesha, Wisconsin	April 1, 1939.

EXHIBIT F

NOTICES OF INFRINGEMENT

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill., October 26th, 1936.

VITAMIN TECHNOLOGISTS, INCORPORATED,
1206 Maple Avenue, Los Angeles, Calif.

GENTLEMEN: It has come to our attention that you are manufacturing and selling certain irradiated Vitamin D products in the preparation of which ultra violet rays are used. Such products include products distributed under the names C. Q. Vitamin D, Condol, Condol Drops and Ray-D Irradiated Yeast Tablets.

This is to notify you that your activities in manufacturing and selling the above-referred-to preparations constitute an infringement of United States Letters Patent No. 1,680,818 of August 8th, 1928, to Harry Steenbock, No. 1,871,136 of August 9th, 1932, to Harry Steenbock and No. 2,057,399 of October 13th, 1936, to Harry Steenbock, all of which patents are owned by the Wisconsin Alumni Research Foundation.

Digitized by Google

You are requested to promptly desist from further infringement of the above-mentioned patents and to account to this Foundation for profits thus far made by you and damages thus far sustained by it as a result of your past infringement. Your failure to comply with this demand will necessitate the Foundation taking appropriate steps to fully protect its rights in the matter.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By WARD ROSS, *General Counsel.*

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill., November 24, 1936.

Messrs. LYON & LYON,
811 West Seventh Street,
Los Angeles, Calif.

GENTLEMEN: Replying to your letter of November 5th, 1936, acknowledged by us under date of November 9th, 1936, the delay in replying to your letter has been occasioned by the writer's unexpectedly long absence from the city. We also wish at this time to acknowledge receipt of your telegram of November 23d in regard to this matter. We did not feel that an appropriate answer to your wire could be set forth in a telegram. Consequently, we are sorry we were unable to comply with your suggestion of wiring the position of the Foundation.

It is not clear to us from your letter of November 5th whether your advice to Vitamin Technologists, Inc. in this matter is based upon your opinion that the three Steenbock patents referred to in our letter of October 26th, 1936, to Vitamin Technologists, Inc. are invalid, or whether you also take the position that those patents are not infringed by your client's process. As you undoubtedly know, we consider the Steenbock patents above referred to are valid. In regard to the question of infringement, our information with respect to the process used by your client, or your client's licensees or customers, is that it is that process described in the campsie Patent No. 1,980,971. Our conclusion in this respect arises from the fact that the literature put out by your client and by your client's licensees or customers, as well as the labels upon their respective products, ordinarily bear reference to the above-mentioned Campsie patent, or the so-called Campsie process. It is our view that the process described in the above-mentioned Campsie patent infringes the Steenbock patents referred to in our letter of October 26th, 1936, to your client, and on the information above described, which indicated the use of that process by your client and/or its licensees or customers, infringement notices were sent to your client and certain other parties on October 26th, 1936. Therefore, upon our present understanding of these practices, our position with respect to the question of infringement remains unchanged from our views as set forth in our letter of October 26th, 1936, to your client. If our understanding is in any respect incorrect, please immediately advise us.

In your letter of November 5th you have charged this Foundation with indulging in

> "the practice of circulating promiscuously threats of legal action against the customers of Vitamin Technologists, Inc., because of the use by these customers of the material supplied them by Vitamin Technologists, Inc."

and in

> "promiscuous notification of alleged infringement and threatening court action."

The charge of unfair conduct on the part of this foundation is quite unfounded. There has in no sense been any practice of wholesale or promiscuous notices of infringement sent by this Foundation to your client or its licensees or customers.

It is true that on October 26, 1936, the date upon which we forwarded an infringement notice to your client, similar notices were sent to other concerns purporting to market products manufactured under the Campsie Patent No. 1,980,971. We assume from your letter that these other concerns are customers of your client, and that all of the irradiated preparations used by these concerns are manufactured by your client rather than by those concerns themselves. If this understanding is correct, it is the first information we have had to this effect. We certainly did not know, for example, that the National Institute of Nutrition did not manufacture its own products, such as ConDol. Its literature would

Digitized by Google

lead one to believe that these products were manufactured by National Institute of Nutrition. Consequently your belief that it is well known—

> "to the Wisconsin Alumni Research Foundation that these materials are supplied to the particular parties in question by Vitamin Technologists, Inc."—

and

> "That no one of these parties utilizes any process or processes allegedly covered by the said Steenbock patents"—

is entirely incorrect.

With respect to anything in the nature of infringement notices sent out by this foundation prior to October 26, 1936, an examination of our file has disclosed only one item which to our knowledge relates to the so-called Campsic process of cold-quartz irradiation described in the Campsie Patent No. 1,980,971. Under date of May 8, 1935, we received an inquiry from the National Institute of Nutrition as to what our position on the question of infringement would be if that concern purchased a vitamin D concentrate made by Vitamin Technologists, Inc. We replied under date of May 15, 1935, that it was our understanding that the vitamin D concentrate manufactured by Vitamin Technologists, Inc., was ergosterol irradiated by ultraviolet light, and that on that understanding we considered the use of such a concentrate by the National Institute of Nutrition would constitute an infringement of the Steenbock Patent No. 1,680,818. We still adhere to this position.

Has the National Institute of Nutrition or any of the concerns whom you represent in this matter done any marketing of any irradiated vitamin D products until lately—that is, during the year 1936—and, if so, when?

In view of the statements made in your letter to us, we think you will agree that you should arrange to permit an accredited representative of the foundation to examine into the processes conducted by your client or clients so that we may have full and accurate knowledge before deciding upon the proper course to pursue. Upon this may we have your early answer? This ought to be done, also, if you are considering favorably the institution of declaratory judgment proceedings in the United States District Court for the Western District of Wisconsin where, if at any place, jurisdiction of the subject matter resides. When we have complete knowledge of the facts (the possession of which your letter of necessity places in some doubt), we can arrange an agreeable course to settle any possible controversies in proper actions.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By WARD ROSS, *General Counsel.*

ARTICLES OF ORGANIZATION OF THE WISCONSIN ALUMNI RESEARCH FOUNDATION

ARTICLE FIRST: The undersigned have associated and do hereby associate themselves together for the purpose of forming a corporation under Chapter 180 Wisconsin Statutes.

ARTICLE SECOND: The business and purposes of the corporation shall be to promote, encourage and aid scientific investigation and research at the University of Wisconsin by the faculty, staff, alumni and students thereof, and those associated therewith, and to provide or assist in providing the means and machinery by which their scientific discoveries, inventions and processes may be developed, applied and patented, and the public and commercial uses thereof determined, and by which such utilization or disposition may be made of such discoveries, inventions and processes, and patent rights or interests therein, as may tend to stimulate and promote and provide funds for further scientific investigation and research within said University or colleges or departments thereof; and furtherance of which general purposes the corporation shall have power and authority:

1. To experiment upon, test, promote, and develop the public, scientific and commercial value of inventions, discoveries and processes;

2. To prosecute and/or aid in the prosecution of applications for patents, and obtain patents, both foreign and domestic;

3. To receive donations, gifts, bequests, or assignments of inventions, applications for patents and/or patents, both foreign and domestic, and of rights, licenses, and interests in inventions, processes, and patents, and of money or other property, and to accept the same subject to such conditions or trusts, as may be attached

Digitized by Google

thereto or imposed thereon with respect to payment of royalties, application of income or proceeds, or otherwise, and to obligate itself to perform and execute, and to perform and execute, any and all such conditions or trusts;

4. To enter into contracts or trust agreements with inventors or applicants for or owners of patents, or of patent rights, licenses, or interests, for the rendering of aid in the obtaining, perfecting, and/or maintaining of patents, both foreign and domestic, and the protection thereof, and for the testing, development, improvement, manufacture, use, and disposition of patented articles, devices, and processes, and for the disposition of the patent rights, licenses, and interests of the inventor, upon such terms and conditions, and with such provisions as to application and use of earnings and proceeds as may be agreed upon;

5. To acquire and to sell and dispose of inventions, applications for patents, and/or patents, both foreign and domestic, and interests therein, and patent rights licenses, and privileges, including territorial rights, and to grant licenses to others to manufacture, use and sell, or either, and to itself manufacture, use and sell, or either, under patents, foreign and domestic, or under licenses, rights and interests therein, and to receive, collect, and enforce collection of royalties, or other consideration, for patents, or patent rights or interests, or devices, articles or processes, of which disposition may be made or contracted for;

6. To prosecute infringements or invasion of any patent or patent right in which the corporation may be interested, and to defend against infringement, and protect, any such patent or patent right;

7. To exercise any and all powers (including the borrowing of money and securing of the same, the holding, administration and disposition of property, the making of conveyances, assignments and contracts and the incurring of obligations) which may be conferred by law or which may be necessary, incidental or convenient to the purposes above mentioned.

ARTICLE THIRD: The name of the corporation shall be Wisconsin Alumni Research Foundation, and its location shall be at the City of Madison, Dane County, Wisconsin.

ARTICLE FOURTH: The corporation shall be without capital stock, and no dividends or pecuniary profits shall be declared or paid to the members thereof.

ARTICLE FIFTH: The management and control of the corporation shall reside in a board of five trustees [1] to be elected by the members for a term of five years, all trustees after the first to be elected for the like term of five years, and all trustees to hold their offices until their respective successors are elected, vacancies, in any case, to be filled by the Trustees for the unexpired term.

The Trustees shall annually elect three officers, to wit, a President, a Vice President and a Secretary and Treasurer. Such officers shall constitute an Executive Committee, which committee shall be entitled to exercise all the powers of the Board of Trustees when not in session, but subject to the direction thereof.

ARTICLE SIXTH: The principal duties of the President shall be to preside at all meetings of the members, of the Board of Trustees, and of the Executive Committee, and to have general supervision of the affairs of the corporation.

The principal duties of the Vice President shall be to discharge the duties of the President in the event of absence or disability, for any cause whatever, of the latter.

The principal duties of the Secretary (who shall also be the Treasurer) shall be to countersign all conveyances, assignments, and contracts executed by the Corporation, affix the seal of the corporation thereto, and to such other papers as may be required or directed to be sealed, and to keep a record of the proceedings of the members, and of the Trustees, and Executive Committee, and to safely and systematically keep all books, papers, records, and documents belonging to the corporation, or pertaining to the business thereof.

The principal duties of the Treasurer (who shall also be the Secretary) shall be to keep and account for all moneys, credits, and property, of any and every nature, of the corporation, which shall come into his hands, and keep an accurate account of moneys received and disbursed, and proper vouchers for moneys disbursed, and to render such accounts, statements and inventories of moneys received and disbursed, and of money and property on hand, and generally of all matters pertaining to his office, as shall be required by the Board of Trustees.

The Board of Trustees may, from time to time, provide for the appointment of such additional officers as they may deem for the best interests of the corporation.

The officers shall perform such additional or different duties as shall from time to time be imposed or required by the Board of Trustees, or as may be prescribed from time to time by the By-Laws.

[1] Increased to six—June 1930.

Digitized by Google

ARTICLE SEVENTH: The method and conditions upon which membesr shall be accepted, discharged or expelled shall be as follows: Only graduates of the University of Wisconsin, or persons who, for period of not less than two years, have attended the University, or one or more of the schools or colleges thereof, shall be eligible for membership other than Honorary Membership.

There shall be three classes of memberships, 1) Sustaining Members, 2) Life Members and 3) Honorary Members.

Any eligible person may become a Sustaining Member upon the acceptance of his application for Membership by the signers of these Articles, or, after the election of Trustees, upon his election by them, and upon his agreement to pay an admission fee of Ten dollars. The Trustees may, from time ot time, by by-law or amendment thereto, change such admission fee, and may fix annual membership dues to be paid by Sustaining Members, and the time and terms of payment thereof. Non-payment of admission fees or dues shall be cause for termination of membership.

Any eligible person may become a Life member upon acceptance of his application by the signers of these Articles, or, after the election of Trustees, upon his election by them, and upon his agreement to pay an admission fee of One Hundred Dollars. The Trustees may, from time to time, by by-law or amendment thereto, change such admission fee, and may provide or agree on behalf of the corporation that the admission fee, or any part thereof, or any sum advanced by a member to the corporation, shall be treated as a loan by the member to the corporation, to be repaid out of net earnings applicable thereto, and under such conditions as to interest and otherwise as the Trustees may provide or as may be agreed upon with the member. Any Life Membership may be terminated by the Trustees upon the failure to make payment of the admission fee.

The Board of Trustees may, by a two-thirds vote, elect any person (irrespective of prior attendance at or connection with the University) as Honorary Member of the corporation, with or without admission fees or dues as may be provided in the bylaws.

The Trustees may, by law or amendment thereto, make such changes in the terms and conditions of membership and such regulations as regards the termination thereof, as they shall deem necessary to the welfare of the corporation.

ARTICLE EIGHTH. At any meeting of the members each member of whatever class shall be entitled to one vote in person or by written proxy, upon the election of Trustees, and upon any other question properly before the meeting. Seven members accepted by the signers of these Articles and present at the first meeting either in person or by written proxy shall be sufficient for the holding of such meeting, the election of Trustees, and the transaction of any other business properly before the meeting, and at such or any future meeting seven members, present in person or by written proxy, shall constitute a quorum for the transaction of any business of the corporation. A majority of the Board of Trustees, or of the Executive Committee, shall constitute a quorum at any meeting of the Board, or of the Committee, as the case may be.

ARTICLE NINTH: The Trustees of the corporation shall have power to make, amend and repeal bylaws and regulations for the government of the corporation, for the orderly conducting of its affairs and management of its property, for determining the manner of calling and conducting its meetings, and the manner of appointing and mode of voting by proxy, and the corporation shall have all other powers now conferred, on which hereafter may be conferred, by law, including all powers which may be necessary or convenient for the accomplishment of its purpose.

ARTICLE TENTH: Until the Trustees of the corporation shall be elected, the signers of these Articles shall have direction of the affairs of the corporation, and may make such rules as may be necessary for perfecting its organization and for accepting members.

The first meeting for the election of Trustees and officers shall be held at the _____, in the City of Madison, Dane County, Wisconsin, on the _____ day of _____ 1925, at _____ o'clock ____.

ARTICLE ELEVENTH: These articles may be amended at any meeting of the members, duly convened and held pursuant to the By-Laws, by a vote of at least one-half of the members; but no such amendment shall change substantially the original purpose of the corporation.

ARTICLE TWELFTH: In case of the dissolution of the corporation the Trustees shall make appropriate provision, by transfer in trust, or otherwise in its discretion, for applying and devoting the net assets of the corporation to the encouragement and development of scientific research in the University of Wisconsin, but any transfer or disposition of such net assets shall be made subject to

Digitized by Google

the discharge of the obligations of the corporation, and to the execution and performance of any trust under which its property or any part thereof may have been received or may be held.

ARTICLE THIRTEENTH: The names and residences of the persons forming this corporation are:

---------- residing at ----------
---------- residing at ----------
---------- residing at ----------

In witness whereof, we have hereunto set our hands this ____ day of ---------- 1925.

Signed in presence of

---------- ----------
---------- ----------
---------- ----------

STATE OF WISCONSIN,
County of Dane, ss:

Personally came before me this ------ day of ----------, 1925, the above named ---------- to me known to be the persons who executed the foregoing instrument and acknowledged the same.

Notary Public, Dane County, Wisconsin.

My commission expires ----------

STATE OF WISCONSIN,
County of Dane, ss:

---------- and ---------- being each duly sworn doth each for himself depose and say that he is one of the original signers of the above Declaration and Articles that the above and foregoing is a true, correct and complete copy of such original Declaration and Articles, and of the whole thereof.

Subscribed and sworn to beofre me this -------- day of August, 1925.

Notary Public, Dane County, Wisconsin.

My commission expires ----------.

BYLAWS

1. The annual meeting of the members of the corporation shall be held on the second Saturday in June 1927, and annually thereafter, at the office of the Central Wisconsin Trust Company, in the city of Madison, Wisconsin. No notice of an annual meeting need be given.

2. Special meetings of the members may be held upon the call of any officer at the time and place designated in the call. Notice of any special meeting, stating the time and place, and, generally, the purpose thereof, shall be mailed to each member at his last known address at least five days prior to the meeting. A meeting may be held at any time without notice if all the members are present either in person or by written proxy. The written consent of any member to the holding of a meeting shall be equivalent to due notice to him thereof.

3. The annual meeting of the Trustees shall be held immediately following the annual meeting of the members, and at the same place. No notice of such meeting need be given.[1]

4. Special meetings of the Trustees may be held on the call of any officer upon the mailing to each Trustee, at his business or residence address, at least three days before the meeting, of a notice stating the time and place of the holding thereof. A meeting may be held at any time without notice if all the Trustees are present. The written consent of any Trustee to the holding of a meeting shall be equivalent to due notice to him thereof.

5. Any present Sustaining Member may become a Life Member upon the payment of an admission fee of $100 in lieu of his admission fee as a Sustaining Member.

6. The following is an impression of the Corporate Seal:

The Treasurer was directed to call in the unpaid admission fees of present Members.

----------,
Secretary.

[1] Changed to "Thursday before Commencement," June 1930.

Digitized by Google

AUGUST 25, 1939.

To: Executive Committee.
From: Organic Chemicals Department.

VITAMIN D LICENSES—WISCONSIN ALUMNI RESEARCH FOUNDATION

Reference is made to our letter to your committee of May 19, 1939, pursuant to which you authorized the foundation to grant General Foods Corporation a license with respect to Vitamin D from nonanimal sources. The agreement the foundation made with General Foods contemplated that additional licenses would later be granted to several other firms, either licensees of General Foods or otherwise affiliated with them. Your authority did not include these additional licenses, since we preferred to wait until we learned their exact terms.

The foundation now wishes to grant a license to the William S. Merrell Co. of Cincinnati, Ohio, limited to Vitamin D from nonanimal sources for sale only as medicinals or pharmaceuticals for human use, which this department is willing to approve. It is limited to nonanimal sources in the pharmaceutical field and, therefore, we do not think it will materially interfere with our own developments. Also, the foundation is able to grant a license with respect to yeast ergosterol without our permission, since that product is not in our license field; and if the license to Merrell is limited to yeast we will not have the opportunity of selling Merrell our own irradiated ergosterol.

We do not think this is a matter requiring the approval of the finance committee.

A copy of the proposed agreement between Merrell and the foundation has been lodged with the secretary of your committee for your inspection.

Approval is therefore requested for the granting of the license to Merrell in the form of the resolution prepared by our legal department and attached hereto.

E. W. ROBINSON, *General Manager.*

JANUARY 21, 1936.

MR. CARL NIELSEN,
Director, Nutritional Research, Abbott Laboratories,
North Chicago, Ill.

DEAR MR. NIELSEN: Your courteous letter of the 9th to Dr. Waddell, in reference to a procedure to activate cholesterol, leads us to believe that our entire presentation of irradiated cholesterol to the three pharmaceutical licensees of the foundation has not been as clear as we intended it to be.

As you know, we did most, if not all of the work on irradiated cholesterol, and Dr. Waddell's paper published in 1933 threw this open to the scientific and medical world. We continued with our research program until we felt that we were about ready to get into commercial production. As you also know, we felt that irradiated cholesterol was either the true vitamin D, or a more nearly true vitamin D than irradiated ergosterol. If we were right, we felt that this new vitamin D should first go to the human field, and it was on this basis that we offered it to four pharmaceutical licensees, with the result that three indicated an active interest.

In our original presentation we tried to make it quite plain that it was our opinion that the pharmaceutical licensees of the foundation could irradiate both cholesterol and ergosterol under the terms of their respective licenses. We were, of course, largely interested in the poultry field, and to protect our position had made tentative arrangements to secure all of the available cholesterol in the country, or perhaps we might say, in the world. We offered to supply the three pharmaceutical houses with their entire requirements of irradiated cholesterol, and at the time made a very rough estimate that the cost would be two or three times as much as the cost of irradiated ergosterol. We further stated that if the pharmaceutical requirements amounted to 120,000 standard units (1 standard unit equals 1,000,000 Steenbock rat units), and the poultry field required 200,000 standard units, and we had available only 240,000 standard units, that the pharmaceutical field would get their entire requirements of 120,000 standard units and the poultry field the balance.

We realize that the pharmaceutical houses would have a preference to irradiate their own cholesterol, but in view of the limited amount of material available, and in view of our several years' experience with the material, we felt that it would be more practical and economical for the pharmaceutical houses to purchase irradiated cholesterol from us in the early stages.

Digitized by Google

We further went on record in stating that we did not have the slightest objection to selling unirradiated cholesterol to the pharmaceutical houses if we should happen to have most of the available material in our possession, and it was found that the pharmaceutical houses could do it more practically and economically than we could for them.

This whole cholesterol matter is still in a state of flux, but should the results of the clinical tests now under way verify our own opinion, it is quite likely that the pharmaceutical licensees will want "to go to market" with irradiated cholesterol next fall. We are preparing ourselves to meet this eventuality, and it would seem to the writer that it would be most "unbusiness-like" for us to disclose the results of years of research before it has been established that we cannot produce sufficient quantities of irradiated cholesterol to meet the demands of the pharmaceutical houses and to do the job more economically than the three pharmaceutical houses can individually.

In all of our discussions with pharmaceutical houses we have tried to put all our cards on the table and will continue to do so, and if we can reach a better understanding on this whole matter by personal discussion, our Mr. S. A. Atkins will be glad to do so at whatever point you designate.

Very truly yours,

KENNETH T. KING,
Manager, Fine Chemicals Division.

E. I. DU PONT DE NEMOURS & COMPANY, INC.,
Wilmington, Del., February 20, 1935.

Re: Acetol-Wisconsin Alumni Research Foundation Agreements.
J. E. KUPPERIAN.

In your letter of February 12, 1935, you requested my opinion as to whether Acetol is licensed to sell irradiated cholesterol for use in feed for cows when the effect of it would be to enhance the vitamin D content of the milk rather than to prevent rickets in the cow itself. Please be advised that Acetol's agreement with the Foundation permits it to manufacture antirachitic products from certain sources, one of which is cholesterol, and to sell such products to various defined classes of purchasers. In the case of feed for cows, there is no restriction whatsoever, upon the class of purchasers. Irradiated cholesterol may, therefore, be used in feed for cows regardless of whether its purpose is to enhance the vitamin D content of the milk or to prevent rickets in the cow itself.

In this connection a further question arises which must be answered by Dr. Waddell. The original contract of November 1929 stated that the vitamin D potency of animal feeds must not exceed five times that of standard cod liver oil. This particular provision was amended by the supplemental agreement of November 1930 in such manner that it permitted the vitamin D potency of animal feeds to be "sufficient to prevent rachitic conditions in domestic animals * * *." A fair interpretation of the agreement as amended would construe the word "sufficient" as placing a maximum limitation upon the vitamin D potency of animal feeds.

Since irradiated cholesterol is much more potent in its antirachitic effects upon the human body than the number of rat units contained therein would suggest, it is quite possible that we will not have to exceed the maximum limits set out in the contract, i. e., an amount sufficient to prevent rachitic conditions in domestic animals. If Dr. Waddell is, however, of the opinion that an appreciably greater amount is necessary to enhance the vitamin D content of the cow's milk we should adhere to the directions set out in the agreement and formally request the foundation to approve the use of a greater potency. The foundation has stated that it will readily consent to change any potency if not incompatible with its policy with respect to other licenses.

If there is any further information or help which you need in this matter please do not hesitate to call upon me.

ARTHUR G. CONNOLLY.

SUPPLEMENTAL AGREEMENT

This supplemental agreement made this First day of February 1939, between the Wisconsin Alumni Research Foundation, a Wisconsin corporation, not for pecuniary profit (hereinafter called the Foundation), and Standard Brands

Digitized by Google

Incorporated, a corporation organized and existing under and by virtue of the laws of the State of Delaware (hereinafter called the Company).

WITNESSETH:

That Whereas the Foundation and The Fleischmann Company, an Ohio corporation, did on August 8th, 1928, enter into a certain license contract whereby the Foundation granted certain rights and licenses to said The Fleischmann Company to use the invention described in application for Patent No. 723,171, filed June 30th, 1924, and Patent No. 1,680,818, issued thereon, also any other patents affecting this invention; and

Whereas the rights and licenses of The Fleischmann Company under said contract have been with the consent of the Foundation, duly assigned to the Company; and

Whereas said agreement of August 8, 1928, has heretofore been amended by various Supplemental Agreements and letter agreements: and

Whereas the Company has an option to renew said license as of the date of this Supplemental Agreement and desires to renew the same upon certain modified terms and conditions; and

Whereas it is agreeable to the Foundation that said license be renewed upon the modified basis hereinafter set forth.

Now, therefore, it is agreed:

I

The Company agrees to pay to the Foundation in full payment for the licenses herein granted the following sums: ($12,500.00) Twelve Thousand Five Hundred Dollars upon the execution of this agreement, the receipt of which is hereby acknowledged by the Foundation: Twelve Thousand Five Hundred ($12,500.00) Dollars on August 1, 1939, and Twelve Thousand Five Hundred ($12,500.00) Dollars semiannually thereafter through August 1, 1944; and Thirteen Thousand Five Hundred ($13,500.00) Dollars on February 1, 1945.

The Foundation hereby grants the Company options to extend the licenses hereinabove granted for successive periods of one year, commencing with the year beginning August 15, 1945. Each option herein provided for shall be exercised by the Company by written notice addressed to the Foundation and deposited in the registered mail not less than thirty days prior to the expiration date of this license, or of the last renewal license, as the case may be. Each such renewal license shall be upon the same terms and conditions as this license except that the amount payable by the Company to the Foundation as full royalty for each one year renewal license shall be $25,000.00 Dollars payable semiannually.

II

The Foundation agrees to waive payment by the Company of the royalty (now provided for in Section I of the Supplemental Agreement of April 4, 1932, between the parties hereto) of per pound for licensed activated yeast products except foil yeast sold by the Company, on all sales of such activated yeast products made by the Company at any time after February 1, 1939, and thereafter during the life of this license and any renewal or renewals thereof.

III

The Company agrees that during the life of this license and any renewal thereof it will not directly or indirectly manufacture for sale, sell, or offer for sale any licensed activated yeast or yeast product or products to any person, firm, or corporation for incorporation in or addition to milk products from which a substantial quantity of the water has been removed, including evaporated, condensed, and "filled" milks (not including, however, chocolate- and cocoa-flavored food products not containing malt or malt extract derived from malted grain, which are sold mixed or to be mixed with milk for the preparation of a beverage), unless said person, firm, or corporation is expressly licensed by the Foundation to purchase such licensed activated yeast or yeast product or products from the Company and to incorporate the same in or add the same to such milk products. The Company further agrees that during the life of this license and any renewal thereof it will not directly or indirectly incorporate any licensed activated yeast or yeast product or products in or add the same to any such milk product.

The term "filled milk" as used in this Supplemental Agreement means any milk, cream, or skimmed milk, whether or not condesned, evaporated, concentrated, powdered, dried, or desiccated, to which has been added, or which has

Digitized by Google

been blended or compounded with any fat or oil other than milk fat, so that the resulting product is in imitation or sembalance of milk, cream, or skimmed milk, whether or not condensed, evaporated, concentrated, powdered, dried, or desiccated.

IV

The Company agrees that during the life of this license and any renewal thereof it will supply to the Foundation licensed activated ergosterol for resale by the Foundation in the form of a Vitamin D concentrate to its licensees or customers for direct addition to fluid milk by such licensees or customers. The Company agrees that it will supply such licensed activated ergosterol at a price not in excess of prices which the Company is then obtaining for licensed activated ergosterol sold for other purposes and in no event shall such price be in excess of the then prevailing market price for irradiated ergosterol.

V

There has heretofore been a dispute between the parties as to whether under said agreement of August 8, 1928, as heretofore amended, the Company has the right to sell licensed activated dry yeast for direct addition to or incorporation in fluid milk, to persons, firms, or corporations not licensed by the Foundation to incorporate such product in fluid milk. It is now agreed by the parties that commencing February 1, 1939, and continuing thereafter during the life of this license and any renewal thereof, the Company shall have the right to sell licensed activated dry yeast or licensed activated ergosterol (both of which products are hereinafter included in the expression "Vitamin D concentrate") for direct addition to or incorporation in fluid milk to any person, firm; or corporation, subject to the following terms and conditions:

(a) The Foundation shall have the right to establish minimum net prices for Vitamin D concentrate sold by the Company for direct addition to fluid milk, and the Company agrees to abide by and observe such minimum net prices. In the event that the Company wishes to market any such products hereunder, upon request from the Company the Foundation shall notify the Company of the minimum net prices it desires to establish. The Foundation shall have the right to modify such prices at any time by written notice to the Company 30 days prior to the effective date of any such modification. Such minimum net prices established by the Foundation shall in no event be in excess, on a per million U. S. P. Vitamin D unit basis, of the minimum net prices then being charged by the Foundation for Vitamin D concentrate sold by it for direct addition to fluid milk.

(b) No free goods of any kind or any other inducements are to be offered by the Company the effect or tendency of which would be to lower the minimum prices established by the Foundation.

(c) The Company [Standard Brands] agrees that during the life of this license and any renewal thereof it will not, without the written consent of the Foundation, directly or indirectly manufacture for sale, sell or offer for sale any Vitamin D concentrate to any person, firm, or corporation for incorporation in or addition to fluid milk which person, firm, or corporation has within three months prior thereto either been authorized by license by the Foundation to irradiate fluid milk directly with ultra violet rays under any of the patents herein licensed, and has been substantially operating under such license, or has purchased from the Foundation a Vitamin D concentrate for direct addition to or incorporation in fluid milk.

(d) The Company agrees that during the life of this license and any renewal thereof it will not directly or indirectly manufacture for sale, sell, or offer for sale any Vitamin D concentrate for direct addition to or incorporation in fluid milk to any person, firm, or corporation which has not previously been licensed by the Foundation under a form of license agreement mutually agreed upon by the parties hereto. Such license form shall not provide for the payment by the licensee thereunder to the Foundation of royalties or any other monies. The terms of such license shall not be less favorable to the licensee thereunder than any form of license then being used by the Foundation in connection with the sale of its Vitamin D concentrate for such use. The Foundation agrees that it will promptly issue a license in the form agreed upon to any and all milk producers and distributors designated by the Company whenever requested by the Company to do so.

Digitized by Google

VI

The Company agrees for a period of two years from February 1, 1939, to waive its rights under Paragraph V of this Supplemental Agreement to sell Vitamin D concentrate for direct addition to fluid milk, upon the following terms and conditions:

(a) The Foundation agrees to pay to the Company during the period hereinafter defined semiannually a sum equivalent to 40% of the net profits of the Foundation, as hereinafter defined, derived by the Foundation from the sale by it of Vitamin D concentrate for direct addition to fluid milk to (1) persons, firms, and corporations previously licensed by the Foundation to use licensed activated yeast as a part of the ration of cows in the production of Vitamin D milk and whose licenses have expired not more than six months prior to the commencement of such sales and (2) persons, firms, and corporations not prior to the commencement of purchases of Vitamin D concentrate from the Foundation for direct addition to fluid milk, licensed by the Foundation to irradiate fluid milk with ultraviolet rays directly or not having previously purchased such Vitamin D concentrate from the Foundation, and which persons, firms, and corporations are secured as customers for the Foundation's Vitamin D concentrate directly and primarily as a result of the Company's soliciting efforts.

(b) The obligation of the Foundation to make the payments provided for in Section VI (a) hereof shall continue only for a period of two years from February 1, 1939, and thereafter so long as the Company continues to waive its right under this Supplemental Agreement to sell Vitamin D concentrate for direct addition to fluid milk and in no event shall such obligation continue beyond the expiration of the licenses herein granted and any renewals thereof.

(c) The term "net profits" as used in this agreement means the gross sales of Vitamin D concentrate by the Foundation to the buyers thereof hereinbefore mentioned less the cost of manufacture of such Vitamin D concentrate and less a sum per year per milk route of each such buyer representing the Foundation's average cost of service per year per milk route of all licenses of the Foundation for the production of Vitamin D milk, and in no event shall such sum be greater than $10.00 per year per milk route. For the purpose of these determinations the cost of manufacture of such Vitamin D concentrate shall include only the cost of ingredients, labels, and cans used, the cost of processing and packing and labor involved therein, rent, and depreciation on equipment employed therein. Net profits shall be calculated separately for each of said buyers of Vitamin D concentrate.

VII

On February 1, 1941, and on February 1 of each succeeding year during the life of this license and any renewal thereof, the Company shall have the option of continuing said waiver of its right to sell Vitamin D concentrate for direct addition to fluid milk for additional successive periods of one year. Such option shall be exercised by written notice from the Company to the Foundation not less than 30 days prior to February 1, 1941, or prior to the expiration of the last expiring one-year period, as the case may be.

It is understood by the parties that should the Company elect to sell a Vitamin D concentrate for direct addition to fluid milk it will endeavor in good faith to make an arrangement under which the Foundation through its existing organization will service the Company's customers for such Vitamin D concentrate in the promotion of sales of Vitamin D milk.

VIII

The Foundation agrees that during the life of this license and any renewal thereof, it will not, without the written consent of the Company, directly or indirectly manufacture for sale, sell, or offer for sale any Vitamin D in any concentrated form to any person, firm, or corporation for incorporation in or addition to fluid milk which person, firm, or corporation has within three months prior thereto been operating under a license issued by the Foundation to use activated yeast as a part of the ration of cows in the production of Vitamin D milk.

Digitized by Google

IX

It is understood and agreed that in the event of a final and determinative decree by a United States Circuit Court of Appeals or by a United States District Court from which no appeal is taken, adjudging the claims of the Foundation patents which cover the licensed operations of the Company to be ineffective to protect the Company's operations under the Licenses granted to it, then the Company shall have the right to terminate this agreement and all obligations thereunder.

X

All provisions of the contract of August 8, 1928, between the parties hereto, as amended by said Supplemental Agreements and letter agreements, shall remain unaltered except as modified by this agreement.

IN WITNESS Whereof the parties hereto have hereunto affixed their corporate seals and caused these presents to be signed, the Wisconsin Alumni Research Foundation by its officers, and Standard Brands Incorporated, by its officers, thereunto duly authorized by their respective Board of Directors.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*
Attest: TIMOTHY BROWN, *Asst. Secretary.*
STANDARD BRANDS INCORPORATED,
By THOMAS L. SMITH, *President.*
Attest: HUGO A. OSWALD, *Secretary.*

STANDARD BRANDS, INC.,
New York, N. Y., July 19, 1938.

Mr. WARD ROSS,
General Counsel, Wisconsin Alumni Research Foundation,
Chicago, Ill.

DEAR MR. ROSS: Many thanks for your letter of July 15, 1938, extending the time for exercising our option to renew the license agreement until January 31, 1939.

It is understood and agreed that we will not during the extended period to January 31, 1939, offer for sale any activated yeast product for direct addition to milks, either fluid or evaporated. We also agree that during this period that we will supply the foundation with irradiated ergosterol for direct addition to milks by licensees of the foundation.

A check for the license for the 6-month period beginning August 1, 1938, and ending January 31, 1939, for $12,500 will be sent to the foundation within the next few days.

I am quite hopeful that during the extended period this matter will be concluded one way or another, and that it will not be necessary for me to ask for any additional extension of time.

It was indeed a pleasure to have met both Dr. Russell and you, and I likewise anticipate looking forward to further pleasant relations with you.

Very truly yours,

R. L. FRUCHTERMAN.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill., August 3, 1938.

Mr. R. L. FRUCHTERMAN,
Standard Brands, Inc., New York City, N. Y.

DEAR MR. FRUCHTERMAN: Thanks for your letter of July 19 which arrived during my absence from the city.

The arrangement you set forth is in full accord with our letter of July 15, and accordingly we shall consider the matter temporarily taken care of.

As indicated in our letter of July 15, we shall look forward to hearing from you just as soon as you are able to give this matter consideration.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By ——— ———, *General Counsel.*

Digitized by Google

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill., July 15, 1938.

Mr. R. L. FRUCHTERMAN,
Legal Department, Standard Brands, Inc.,
New York City, N. Y.

DEAR MR. FRUCHTERMAN: With reference to our recent conversation over long-distance telephone, and to our personal conference in New York on July 11, 1938, I am now authorized to state that in view of the situation in which you find yourself as a result of the untimely death of Mr. Arthur Ritter, and the heavy burden falling upon your shoulders, the Foundation is willing to extend the time within which Standard Brands has the right to exercise its option to renew its license agreement with the Foundation, under the Steenbock patents, from July 31, 1938, to January 31, 1939.

This extension is granted and agreed to by the Foundation upon the understanding that Standard Brands will not during this extension period to January 31, 1939, offer for sale any activated yeast product for direct addition to milks, either fluid or evaporated, and with the further understanding that during this period Standard Brands will supply to the Foundation irradiated ergosterol for direct addition to milks by licensees of the Foundation.

We will appreciate your confirming the above understanding by letter.

As indicated above, we, of course, realize the load which you will have to carry as a result of having to take over Mr. Ritter's work. It is, however, our very definite desire to come to some definite understanding with Standard Brands in regard to this matter just as soon as possible. As we mentioned to you in our personal conference, the Foundation has made a specific proposal to Standard Brands under which the license would be put upon a year-to-year basis if Standard Brands would agree to waive certain alleged rights thereunder. This proposal was made first in our letter to Mr. Ritter of May 29, 1937, and substantially the same proposal was reiterated in our letter of September 25, 1937.

It has now been approximately fourteen months since this suggestion was originally placed before your company. We believe that we are entitled to an answer to that suggestion and that it is not unreasonable for us to expect a definite answer prior to the termination of the six months' extension period dealt with in this letter.

Both Dr. Russell and I enjoyed meeting you in New York and are looking forward to further pleasant relations with you.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By ——— ———, *General Counsel.*

SUPPLEMENTAL AGREEMENT

This Supplemental Agreement made this 20th day of February 1936, between the Wisconsin Alumni Research Foundation, a Wisconsin corporation, not for pecuniary profit (hereinafter called the Foundation) and Standard Brands, Incorporated, a corporation organized and existing under and by virtue of the laws of the State of Delaware (hereinafter called the Company),

WITNESSETH:

That, Whereas, the Foundation, and the Fleischmann Company, an Ohio corporation, did on August 8th, 1928, enter into a certain license contract whereby the Foundation granted certain rights and licenses to said The Fleischmann Company to use the invention described in application for patent No. 723,171, filed June 30th, 1924, and Patent No. 1,680,818, issued thereon, also any other patents affecting this invention, and

Whereas the rights and licenses of The Fleischmann Company under said contract have been with the consent of the Foundation, duly assigned to the Company, and

Whereas said agreement of August 8, 1928, has heretofore been amended by various Supplemental Agreements and letter agreements, and

Whereas a doubt has arisen in the minds of the parties thereto regarding the date upon which Standard Brands, Incorporated, may exercise its second option to extend the licenses granted in said agreement, for the balance of the full term and life of any United States Letters Patent of the Foundation therein licensed, pursuant to Section IX of said Agreement of August 8th, 1928, as amended, and

Digitized by Google

Whereas it is the desire of the parties hereto to resolve said doubt by definitely fixing the date prior to which said option must be exercised,

Now, therefore, it is agreed as follows:

I

The right of Standard Brands, Incorporated, to exercise the renewal option contained in Section IX of said contract of August 8, 1928, for the balance of the full term and life of any United States Letters Patent of the Foundation referred to in said contract of August 8, 1928, shall expire upon July 31, 1937.

II

All other provisions of the contract of August 8, 1928, between the parties hereto, as amended by said Supplemental Agreement and letter agreements, shall remain unaltered except as expressly modified by this agreement.

In witness whereof the parties hereto have hereunto affixed their corporate seals and caused these presents to be signed, the Wisconsin Alumni Research Foundation, by its officers, and Standard Brands, Incorporated by its officers, thereunto duly authorized by their respective Boards of Directors.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest:

L. M. HANKS, *Secretary.*

STANDARD BRANDS INC.,
By THOMAS L. SMITH, *First Vice President.*

Attest:

JOHN B. NOONE, *Asst. Secretary.*

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., December 19, 1935.

STANDARD BRANDS, INC.,
New York City.

GENTLEMEN: This letter is in confirmation of the understanding arrived at in our conference with your representatives at your office yesterday. You have represented to us that you are undertaking a sales campaign during 1936 on activated yeast for cow feeding involving an additional expenditure on your part, over 1935, of approximately $50,000. You have requested that, in consideration of your undertaking this campaign, the foundation waive certain royalty payments that may become due from you to the foundation during the year 1936 under our agreement of August 8, 1928, as amended, and during the year 1937 until the termination of that agreement on July 31, 1937.

We propose the following modifications of the existing license agreement of August 8, 1928, as amended, between the foundation and Standard Brands, Inc.

1. The foundation agrees to waive the payment by Standard Brands, Inc., of the 2-cent-per-pound royalty that may become due to the foundation pursuant to section II A7 of said agreement of August 8, 1928, as amended, on sales of activated yeast products in excess of 800,000 pounds during the 19-month period commencing January 1, 1936, and ending July 31, 1937, made by Standard Brands, Inc., to milk producers licensed by the foundation to feed such activated yeast products to cows for the production of antirachitic milk.

2. Standard Brands, Inc. agrees that it will in good faith not endeavor during the last portion of said period from January 1, 1936, to August 1, 1937, by sales campaigns, price reductions or otherwise, to anticipate the requirements of milk producers licensed by the foundation to purchase and feed activated yeast products to cows, by selling, directly or indirectly, amounts to such licensees, which are, considering the usual requirements of such licensees, in excess of the customary amounts purchased to satisfy such requirements.

3. Standard Brands, Inc., agrees from the date hereof until the expiration of said agreement of August 8, 1928, as amended, namely upon July 31, 1937, that it will not directly or indirectly manufacture for sale, sell or offer for sale any activated yeast product or products to any evaporated or condensed milk producer or to any other person, for incorporation in or addition to evaporated or condensed milks.

Digitized by Google

4. It is mutually agreed that nothing in this letter agreement shall in any way enlarge or expand the rights of Standard Brands, Inc., under said agreement of August 8, 1928, as amended, to sell activated yeast products in any field or fields and/or for any purpose or purposes other than those provided for in said agreement of August 8, 1928, as amended; it being understood that nothing contained in this letter agreement shall be construed as constituting an admission on the part of the foundation that Standard Brands, Inc., under its license agreement of August 8, 1928, as amended, has any rights to sell activated yeast products for addition to or incorporation in evaporated or condensed milks. If this agreement is satisfactory to you, please indicate your acceptance thereto by your signature at the foot of this letter, and return one copy to us.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By H. L. RUSSELL, *Director.*

Accepted.

STANDARD BRANDS, INC.,
By A. C. LEMKAU.

STANDARD BRANDS INC.,
New York, N. Y., April 29, 1932.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis.

GENTLEMEN: As you are aware, the license term of our agreement dated August 8, 1928, was duly extended to August 1, 1932, and payments made covering such extended period pending the disposition of litigation between us. That litigation having now been disposed of, we hereby notify you that this company desires to, and hereby does, exercise its option to extend the licenses granted in said agreement of August 8, 1928, pursuant to section IX therein, for an additional term of 5 years from August 1, 1931, up to and including the 31st day of July 1936.

Your confirmation will be appreciated.

Very truly yours,

HUGO A. OSWALD, *Secretary-Treasurer.*

License granted this day of by the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for pecuniary profit, hereinafter called the Licensor, to of hereinafter called the Licensee,

WITNESSETH:

Whereas, the Licensor is the owner of United States Letters Patent No. 1,680,818, issued August 14, 1928, relating to antirachitic products and processes, and other patents and applications for patents relating to the same;

Whereas, the Licensor has granted a license to STANDARD BRANDS INCORPORATED, authorizing said Company, exclusively, to activate dried yeast under said patented process, but to sell the same only to other licensees of the Licensor, when said yeast is intended for use in the manner herein licensed;

Whereas, the Licensee is desirous of securing a license under said Letters Patent to increase the antirachitic qualities of milk by the feeding of irradiated dried yeast to cows;

Now, therefore, in consideration of the premises and the sum of for each cow in a producing herd of not more than cows, the receipt whereof is hereby acknowledged, the Licensor has licensed and empowered, and by these presents does license and empower the Licensee to purchase from STANDARD BRANDS INCORPORATED, dried yeast antirachitically activated under said Letters Patent and other patents, upon the following terms and conditions:

FIRST: The Licensee shall buy and use such yeast for no other purpose than that of feeding cows to impart antirachitic qualities to milk.

SECOND: This License shall expire one year from the date hereof.

THIRD: The Licensee agrees to feed such irradiated dried yeast at the average daily ration of not less than ten (10) ounces per cow until such time as biological tests indicate that a different amount may be fed to impart a potency of not less than approximately 160 Steenbock Units per quart of milk, and Licensee will cause to be made such biological tests as may be necessary.

The Licensee shall keep a record of all such activated yeast used and the number of cows fed, and the Licensor shall have the right at any time to inspect such

Digitized by Google

records, as well as the dairy, plant, or farm of the Licensee. Licensor shall also have the right to test the milk activated under this License, and the Licensee will furnish to the Licensor, upon request, free of charge, the necessary samples for this purpose.

FOURTH: The Licensee shall not sell any of its antirachitically activated milk to others for use or incorporation in any other marketed product when Vitamin D or antirachitic claims are made or intended to be made for such other marketed product.

FIFTH: The activated yeast purchased by Licensee pursuant to this License shall not be resold or otherwise used except for feeding the same to the Licensee's animals, pursuant to the conditions of this license.

SIXTH: The Licensee shall not without the approval of the Licensor circulate any advertising material relating to the Licensor, the Steenbock process, the Steenbock patents, the University of Wisconsin or Dr. Steenbock, nor shall Licensee make any unwarranted claims for the milk so produced.

SEVENTH: The Licensee shall not assign this license without the written consent of the Licensor.

EIGHTH: Licensee hereby accepts the said License upon the terms and conditions herein set forth and does hereby agree to comply with all the said terms and conditions. Violation of any of such terms and conditions shall constitute sufficient cause for the revocation of this license forthwith.

Dated .....

Expired .....

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Accepted:

.....,
Licensee.

Approved:

STANDARD BRANDS INCORPORATED,
By .....

SUPPLEMENTAL AGREEMENT

This agreement made this 4th day of April 1932, between the WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for pecuniary profit (hereinafter called the FOUNDATION) and STANDARD BRANDS INCORPORATED, a corporation organized and existing under and by virtue of the laws of the State of Delaware (hereinafter called the COMPANY),

WITNESSETH:

That, whereas, the FOUNDATION and the Fleischmann Company, an Ohio corporation, did on August 8, 1928, enter into a certain license contract whereby the FOUNDATION granted certain rights and licenses to said The Fleischmann Company to use the invention described in Application for Patent No. 723,171, filed June 30, 1924, and Patent Number 1,680,818 issued thereon, also any other patents affecting this invention, and

Whereas, the rights and licenses of The Fleischmann Company under said contract have been with the consent of the FOUNDATION, duly assigned to the COMPANY, and

Whereas, there is now pending on appeal in the Supreme Court of the State of Wisconsin, a suit instituted by the COMPANY against the FOUNDATION, to secure a judicial interpretation in regard to the rights of said COMPANY under said contract to sell the activated yeast products therein licensed, and

Whereas, the FOUNDATION and the COMPANY are desirous of composing their differences without further legal proceedings by entering into a Supplemental Contract amending said license contract of August 8, 1928;

Now, therefore, it is agreed as follows:

I

That Section II, Paragraph A of said license contract be amended to read as follows:

A—The exclusive right and license to manufacture, use and sell throughout the United States and Canada, antirachitically activated Foil Yeast, Dried Yeast, Autolyzed Yeast, Hydrolyzed Yeast, and like yeast products, whether antirachitically activated in bulk (directly) or by incorporation therein of separately antirachitically activated substance (indirectly) subject, however, to the following terms, conditions and agreements:

Digitized by Google

1. If such yeast products are to be activated indirectly they shall not be activated to a potency in excess of that obtainable by direct irradiation.

2. None of such yeast products shall be used by the COMPANY or sold to others than licensees of the FOUNDATION for use in a field or fields in which the FOUNDATION has prior to the date hereof issued a license or licenses, except as hereinafter provided. (A list of such licensees and the respective fields covered by such licenses is hereto attached, marked Exhibit "A".)

3. Nothing herein contained shall prevent the COMPANY from selling such activated yeast products without restriction in the feed fields for stock, poultry, animals and birds, nor shall anything herein contained prevent the COMPANY from selling its activated foil yeast without restriction as heretofore.

4. The COMPANY shall not use or sell such activated yeast products for incorporation in the following products, viz: margarines, cosmetics, bottled soft drinks, chewing gum, flour and cheese.

5. For all purposes and in all fields other than those hereinabove in subparagraphs 2 and 4 set forth (except the natural liquid milk field, as hereinafter set forth) the COMPANY has the right to sell and use such activated yeast products without restriction, but it shall not permit the name of Dr. Steenbock, the University of Wisconsin or the Foundation to be used in the advertising of any product in which such activated yeast products may be incorporated, without the consent and approval of the FOUNDATION.

6. The COMPANY shall pay to the FOUNDATION a royalty of 2¢ per pound for all such activated yeast products, except Foil Yeast, sold by the COMPANY; such payments shall be made semiannually and in addition to other payments provided for under said contract of August 8, 1928.

7. The COMPANY shall make no price discrimination in the sale of such activated yeast products in favor of nonlicensees.

II

It is understood by the parties that producers of milk are now seeking to increase the antirachitic qualities of milk by the use of activated yeast as a part of the ration of cows, and it is agreed that the COMPANY will not sell its activated dried yeast to milk producers unless they have a license from the FOUNDATION in the form of Exhibit "B" attached hereto, or similar form as may be mutually agreed upon between the COMPANY and the FOUNDATION from time to time. The FOUNDATION agrees that it will promptly issue a license in such form or similar form and for the consideration therein named, to any and all milk producers designated by the COMPANY, whenever requested by the COMPANY to do so, and it is understood that nothing therein contained shall prevent such licensees from evaporating, condensing or drying such activated milk, or selling the same to other persons, firms or corporations intending to evaporate, condense or dry such activated milk.

III

The FOUNDATION agrees that it will not grant new licenses or permit any of its existing licensees, except insofar as such licensees may already be licensed, to sell or use irradiated ergosterol or any solution thereof as a source or medium of imparting Vitamin D properties to liquid milk to be marketed as such, provided, however, that if the parties, having in mind the public welfare, shall mutually agree that the activation of any particular grade or grades of milk, other than certified milk, by direct addition of ergosterol or any solution thereof (as differentiated from feeding such ergosterol or solution thereof) is a more suitable or satisfactory means of imparting Vitamin D qualities to such milk, than thru the medium of feeding Irradiated Dry Yeast, then this restriction shall not apply as to such grade or grades of milk.

In the absence of such mutual agreement, it is understood that nothing in this paragraph shall prevent the FOUNDATION after two (2) years from the date hereof, from granting licenses to dealers in milk to use irradiated ergosterol or solutions thereof derived from yeast for direct incorporation into grades of milk other than certified milk as a means of imparting Vitamin D thereto, provided, that the FOUNDATION will not grant any such licenses to producers of milk who may be using irradiated dry yeast. In the event that the FOUNDATION grants any such licenses, the COMPANY agrees that it will supply to such licensees irradiated ergosterol at prices that shall not be in excess of prices which the COMPANY is then obtaining for irradiated ergosterol sold for other purposes, and in no event shall such price be in excess of ONE ($1.00) DOLLAR for 666,666 present Steenbock Vitamin D units.

Digitized by Google

IV

The COMPANY shall cooperate with the FOUNDATION to the best of its ability in enforcing the provisions and restrictions of the preceding paragraphs, and to this end agrees that it will promptly discontinue the sale of such activated yeast products to any person, firm, or corporation wrongfully using, disposing of, or intending to wrongfully use or dispose of such yeast; it being understood that the FOUNDATION and the COMPANY shall be in mutual accord as to the facts of such wrongful use or disposition, or intended wrongful use or disposition of such yeast.

The COMPANY further agrees that it will promptly discontinue the sale of such activated yeast products to any person, firm, or corporation licensed by the FOUNDATION when it comes to the attention of the COMPANY by notice or otherwise that such person, firm, or corporation is violating the provisions of its license from the FOUNDATION, it being understood, however, that the FOUNDATION and the COMPANY shall be in mutual accord as to the facts of such violation.

It is distinctly understood and agreed, however, that the COMPANY shall not be responsible or in any way liable for the wrongful acts or representations of any purchaser or user of said products.

V

The COMPANY agrees that it will keep complete records of the sales of its activated yeast products (except Foil Yeast) and will furnish summaries of such records to the FOUNDATION semiannually. The COMPANY further agrees that it will, upon request, furnish information as to the amount of activated yeast sold to any licensee whom the FOUNDATION may wish to investigate.

Promptly upon the execution of this Supplemental Agreement the COMPANY shall dismiss the appeal in the case of *Standard Brands Incorporated* v. *The Wisconsin Alumni Research Foundation*, now pending in the Supreme Court of the State of Wisconsin.

VII

It is also agree that the following language appearing in Clause IX of the contract dated August 8, 1928, shall not hereafter be operative:

> and shall be such amounts plus an amount, if any, which shall be determined and fixed by the Company at the end of each year after reviewing its licensed operations for such year and in good faith based upon the profitableness and the general value and benefit of the licensed inventions to the Company during such year, and which shall appear, in the judgment of the Company to be fair and reasonable. It is understood and agreed that each such extra amount determined and paid by the Company in excess of the $25,000.00 per year minimum shall be considered independently of any such amount of the same character which may have been paid theretofore or which may be paid thereafter.

VIII

All other provisions of the contract of August 8, 1928, shall remain unaltered except as expressly modified by this Agreement.

In witness whereof, the Parties have hereunto affixed their corporate seals and caused these presents to be signed, the WISCONSIN ALUMNI RESEARCH FOUNDATION, by its officers, and STANDARD BRANDS, INCORPORATED, by its officers, thereunto duly authorized by their respective Boards of Directors.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President*.

Attest:

L. M. HANKS, *Secretary*.

STANDARD BRANDS INCORPORATED,
By JOSEPH WILSHIRE, *President*.

Attest:

HUGO A. OSWALD, *Secretary*.

Digitized by Google

Exhibit A

Licensee	*Field*
The Dry Milk Company, Inc	Dry Milk.
Snider Packing Corporation	Tomato Juice.
United Biscuit Company of America	Biscuits.
Canada Biscuit Company	Biscuits.
Hygeia Nursing Bottle Company	Fruit and Vegetable Purees.
The Quaker Oats Company	Rolled Oats and Oatmeal, puffed rice, puffed wheat, and other puffed products, cornmeal and corn flour, pancake flour, macaronia, stock and poultry feed, and other cereal products.
E. R. Squibb & Sons	Human medicinal preparations.
Mead Johnson & Company	
Winthrop Chemical Company	
Abbott Laboratories	
Parke-Davis & Company	
Silmo Chemical Company	Stock, Poultry and Animal feeds.
National Foods Limited	Bread stuffs, including bread, rolls, buns, coffee cakes, cakes, fruit cakes and doughnuts.
R. B. Davis & Company	Cocomalt.
Acetol Products Inc	Stock, Poultry and Animal feeds.

SUPPLEMENTAL AGREEMENT

Supplemental Agreement made this 21st day of January 1932, between the Wisconsin Alumni Research Foundation a Wisconsin corporation not for pecuniary profit, and the Standard Brands, Incorporated, a corporation organized and existing under and by virtue of the laws of the State of Delaware,

WITNESSETH

That whereas by License Agreement dated August 8, 1928, the Wisconsin Alumni Research Foundation has granted to the Fleischmann Company (now Standard Brands, Incorporated) a license under application for United States Letters Patent, Serial No. 723,171, and Letters Patent No. 1,680,818, issued thereon, upon the terms and conditions therein specified, and

Whereas there is now pending in the Supreme Court of the State of Wisconsin an appeal by the Standard Brands, Incorporated from the decision in a suit instituted by said Company in the Circuit Court of Dane County to obtain a judicial construction of Paragraph IIA of said contract, and

Whereas it appears that such appeal cannot be judicially disposed of prior to February 1, 1932, the date on which the license now held by the Standard Brands, Incorporated pursuant to said contract and an extension thereof expires, and

Whereas pursuant to Section IX of said contract and pursuant to the provisions of a Supplemental Agreement heretofore entered into by the parties, the Standard Brands, Incorporated has a certain option for a five-year renewal of said license, which may be exercised while its license rights are still in force—that is to say prior to February 1, 1932, and

Whereas the parties desire to extend the time at which such option may be exercised by Standard Brands, Incorporated, it is hereby agreed:

I

The right of Standard Brands, Incorporated, to exercise the five-year renewal option contained in Section IX of said contract of August 8, 1928, is extended from February 1, 1932, to August 1, 1932, during which period the licenses now in force pursuant to said contract of August 8, 1928, shall be extended.

II

In consideration of the above granted rights, Standard Brands, Incorporated, shall on February 1, 1932, pay to the Wisconsin Alumni Research Foundation the sum of TWELVE THOUSAND FIVE HUNDRED ($12,500) DOLLARS as a minimum full royalty for such extended period.

Digitized by Google

III

On August 1, 1932, Standard Brands, Incorporated, will review its licensed operations as provided in Section VIII of the contract of August 8, 1928, as to the two-year period therein mentioned, and also as to the periods from August 1, 1931, to February 1, 1932, and from February 1, 1932, to August 1, 1932, and in good faith, based upon the profitableness and general value and benefit of the licensed invention to the Company during such periods make such increased payments if any, therefor, to the Foundation as shall, in the judgment of the Company, be fair and reasonable.

In witness whereof the parties have hereunto affixed their corporate seals, caused these presents to be signed, the Wisconsin Alumni Research Foundation by its agents and Standard Brands Incorporated, by its officers, thereunto duly authorized by their respective Boards of Directors.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEORGE I. HAIGHT, *President.*

[SEAL]

L. M. HANKS, *Secretary.*
STANDARD BRANDS INCORPORATED,

[SEAL] By JOSEPH WILSHIRE, *President.*

STATE OF ILLINOIS,
County of Cook, ss:

On the 26th day of January 1932, before me came GEORGE I. HAIGHT, to me known, who being by me duly sworn, did depose and say that he resides in Chicago, Illinois; that he is the President of The Wisconsin Alumni Research Foundation, the corporation described in and which executed the above instrument; that he knows that the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that they signed their names thereto by like order.

META SCHMIDT,
Notary Public, Cook County.

STATE OF NEW YORK,
County of New York, ss:

On the 21st day of January 1932, before me came JOSEPH WILSHIRE to me known, who being by me duly sworn, did depose and say that he resides in Greenwich, Connecticut; that he is the President of Standard Brands, Incorporated, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

MAE DE LA MARCHE,
Mae De La Marche,
Notary Public, Bronx Co. No. 145.

SUPPLEMENTAL AGREEMENT

Whereas by License Agreement dated August 8, 1928, the Wisconsin Alumni Research Foundation has granted to The Fleischmann Company (now Standard Brands, Incorporated) a license under application for United States Letters Patent Serial No. 723,171, and Letters Patent No. 1,680,818, issued thereon, upon the terms and conditions therein specified; and

Whereas there is now pending in the Circuit Court of Dane County, Wisconsin, a suit instituted by Standard Brands, Incorporated, against the Wisconsin Alumni Research Foundation to obtain a judicial construction of Paragraph IIA of said contract; and

Whereas it appears that such suit cannot be judicially disposed of prior to August 1, 1931, the date on which the license now held by Standard Brands, Incorporated, pursuant to said contract expires; and

Whereas pursuant to Section IX of said contract Standard Brands, Incorporated, has a certain option for a five-year renewal of said license which may be exercised while its license rights are still in force, that is to say prior to August 1, 1931; and

Whereas the parties desire to extend the time at which such option may be exercised by Standard Brands, Incorporated, it is hereby agreed:

Digitized by Google

1. The right of Standard Brands, Incorporated, to exercise the five-year renewal option contained in Section IX of said contract of August 8, 1928, is extended from August 1, 1931, to February 1, 1932, during which period the licenses now in force pursuant to the said contract of August 8, 1928, shall be extended.

2. In consideration of the above-granted rights, Standard Brands, Incorporated, shall on August 1, 1931, pay to the Wisconsin Alumni Research Foundation the sum of TWELVE THOUSAND FIVE HUNDRED ($12,500) DOLLARS as minimum full royalty for such extended license period.

3. On February 1, 1932, Standard Brands, Incorporated, will review its licensed operations as provided in Section VIII of the contract of August 8, 1928, as to the two-year period therein mentioned, and also as to the period from August 1, 1931, to February 1, 1932, and in good faith, based upon the profitableness and general value and benefit of the licensed invention to the Company during such periods make such increased payments if any, therefor, to the Foundation as shall, in the judgment of the Company, be fair and reasonable.

In witness whereof the parties have hereunto affixed their corporate seals, caused these presents to be signed, the Wisconsin Alumni Research Foundation, by its agents, and Standard Brands Incorporated, by its officers, thereunto duly authorized by their respective Boards of Directors.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
[CORPORATE SEAL] By GEO. I. HAIGHT, *President.*

STANDARD BRANDS, INCORPORATED,
[CORPORATE SEAL] By JOSEPH WILSHIRE, *President.*

STATE OF ILLINOIS,
County of Cook, ss:

On the 30th day of June, 1931, before me came GEORGE I. HAIGHT to me known, who being by me duly sworn, did depose and say that he resides in Chicago, Illinois; that he is the President of The Wisconsin Alumni Research Foundation, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that they signed their names thereto by like order.

GEO. I. HAIGHT.

Subscribed and sworn to before me this 30th day of June 1931.

META SCHMIDT,
Notary Public.

STATE OF NEW YORK,
County of New York, ss:

On the 25th day of June, 1931, before me came JOSEPH WILSHIRE to me known, who being by me duly sworn, did depose and say that he resides in Greenwich, Connecticut; that he is the President of Standard Brands, Incorporated, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

GERTRUDE F. HOGAN,
Notary Public, Bronx County, New York.

ASSIGNMENT

Know All Men by These Presents, that THE FLEISCHMANN COMPANY, a corporation duly organized and existing under the laws of the State of Ohio, being one of the parties in and to a written agreement dated August 8, 1928, between The Fleischmann Company and The Wisconsin Alumni Research Foundation, a corporation not for profit, under the laws of the State of Wisconsin, for good and valuable considerations, the receipt and sufficiency whereof are hereby acknowledged, does hereby sell, assign, transfer, and set over unto STANDARD BRANDS, INCORPORATED, a corporation organized and existing under the laws of the State of Delaware, all its right, title, and interest in, to and under said written agreement dated August 8, 1928, including all rights of action accrued or hereafter to accrue

Digitized by Google

thereunder, together with all other rights of any nature or kind arising under said contract, or in connection therewith.

Dated September 11, 1929.

THE FLEISCHMANN COMPANY,
By HENRY J. KALTENBACH,
Vice President.

Attest:

JOHN B. NOONE,
Assistant Secretary.

STANDARD BRANDS, INCORPORATED, hereby accepts and ratifies the foregoing assignment and consents to become a party to said written agreement in the place and stead of THE FLEISCHMANN COMPANY, and herewith assumes the obligations of THE FLEISCHMANN COMPANY thereunder.

Dated September 11, 1929.

STANDARD BRANDS INCORPORATED,
By JOSEPH WILSHIRE, *President.*

Attest: HUGO A. OSWALD, *Secretary.*

THE WISCONSIN ALUMNI RESEARCH FOUNDATION, by its agents, hereby consents to and approves the foregoing assignment and accepts STANDARD BRANDS INCORPORATED, as a party to the written agreement of August 8, 1928, in the place and stead of THE FLEISCHMANN COMPANY.

Dated September 15th, 1929.

THE WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEO. I. HAIGHT, *President.*

Attest: L. M. HANKS, *Secretary.*

STATE OF NEW YORK,
County of New York, ss:

On this 11th day of September, 1929, before me came Henry J. Kaltenbach, to me known, who, being by me duly sworn did depose and say that he resides in Yonkers, New York; that he is the Vice-President of THE FLEISCHMANN COMPANY, the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation; and that he signed his name thereto by like order.

GERTRUDE F. HOGAN.

STATE OF NEW YORK,
County of New York, ss:

On this 11th day of September 1929, before me came Joseph Wilshire, to be known, who, being by me duly sworn did depose and say that he resides in Greenwich, Conn.; that he is the President of STANDARD BRANDS INCORPORATED, the corporation described in and which executed the foregoing instrument; that he knows that the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation; and that he signed his name thereto by like order.

GERTRUDE F. HOGAN,
Notary Public, Bronx County.

STATE OF ILLINOIS,
County of Cook, ss:

On this 15th day of September 1929, before me came Geo. I. Haight and L. M. Hanks, to be known, who being by me duly sworn, did depose and say that they reside in Evanston, Illinois, and Madison, Wisconsin, respectively; that they are the agents of The Wisconsin Alumni Research Foundation, the corporation described in and which executed the above instrument; that they know the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that they signed their names thereto by like order.

M. K. HOBBS, *Notary Public.*

AGREEMENT

This agreement dated the 8th day of August 1928 between THE WISCONSIN ALUMNI RESEARCH FOUNDATION, a corporation not for profit under the laws of the State of Wisconsin (hereinafter called the Foundation) and THE FLEISCHMANN

Digitized by Google

COMPANY, a corporation organized and existing under the laws of the State of Ohio and having a principal office in the City, County and State of New York (hereinafter called the Company), each by its proper officers thereunto duly authorized, WITNESSETH:

I. The Foundation represents and warrants that it has full right and authority to convey the license rights hereinafter granted.

II. The Foundation grants the Company under application for United States patent, Serial No. 723,171, filed June 30, 1924 by Harry Steenbock and under any and all United States Letters Patent which may eventuate therefrom, and under any and all additional United States patents and applications therefor now owned or hereafter acquired by the Foundation relating to antirachitic activation of substances (all hereinafter referred to as the Foundation patent rights) the following rights and licenses for the entire effective territory of said patents,

A. The exclusive right and license to manufacture antirachitically activated Foil Yeast, Dried Yeast, Autolyzed Yeast, Hydrolyzed Yeast, and the like yeast products whether antirachitically activated in bulk (directly) or by incorporation therein of separately antirachitically activated substance (indirectly) and to sell such antirachitically activated Foil Yeast, Dried Yeast, Autolyzed Yeast, Hydrolyzed Yeast, and the like yeast products without restriction throughout the United States and Canada, the Company agreeing, however, that it will not knowingly sell any of its products licensed under this paragraph in substantial quantities in the exclusive licensed field of any other licensee of the Foundation under the Foundation patent rights and that, if such sale should occur, it will after notice use all reasonable business effort in good faith to prevent the recurrence thereof.

B. The exclusive right and license to manufacture antirachitically activated compressed yeast of the type used commercially by bakers or in the home whether antirachitically activated directly or indirectly and to sell the same only to other licensees of the Foundation.

C. The exclusive right and license to make and the exclusive right and license to sell, but only to other licensees of the Foundation, yeast and yeast products, as defined in Paragraph A and B above, but unactivated, for use as a source of antirachitically activatable unsaponifiable lipoids for antirachitic activation, it being understood, however, that the right and license of the Company under the provisions of this Paragraph C shall remain exclusive only during the period or periods that the Company's net selling price for such yeast and yeast products to other licensees of the Foundation shall not be in excess of the Company's net selling price for equal quantities of similar substance sold under similar conditions as to delivery and the like at the same time to bakers or the Company's other trade customers. It is understood and agreed that the rights of the Company to sell unactivated compressed yeast shall not be affected by any provisions of this agreement and that such sale by the Company shall not affect the term or force of this agreement.

D. A nonexclusive right and license to make and the exclusive right and license to sell, but only to other licensees of the Foundation, antirachitically activatable unsaponifiable lipoids, for antirachitic activation, derived from compressed yeast or dried yeast or other yeast used commercially by bakers or in the home, it being agreed, however, that the right and license of the Company under the provisions of this paragraph D shall remain exclusive only during the period or periods that the Company's net selling price therefor to other licensees of the Foundation shall not be more than ____ in excess of the bona fide cost to such licensees of equal quantity of such substance of equal quality imported from abroad (save for such prohibition) and delivered at the same point in the United States with duty and transportation charges paid.

E. A nonexclusive right and license to make and/or sell, but only to other licensees of the Foundation, antirachitically activated unsaponifiable lipoids derived from yeast and yeast products.

III. The Foundation undertakes and agrees that all future licenses which it may grant under the Foundation patent rights shall be granted in all cases subject to the rights of the Company as hereinabove set forth and that no license shall be granted by the Foundation to any other yeast manufacturer, in the United States or Canada, than the Company.

IV. The Foundation undertakes and agrees that in each license hereafter executed under its patent rights, it will incorporate a restrictive provision whereby such licensee shall not be licensed to import into the United States any antirachitically activated foil yeast, dried yeast, autolyzed yeast, hydrolyzed yeast, or compressed yeast, and shall not be licensed to antirachitically activate in the

Digitized by Google

United States any foil yeast, dried yeast, autolyzed yeast, hydrolyzed yeast or compressed yeast imported from outside the United States.

V. The Foundation further undertakes and agrees that in each such future license (with only the possible exception stated in Paragraph VI following) it will also incorporate a restrictive provision whereby such licensee shall not be licensed to import into the United States any antirachitically activatable unsaponifiable lipoids derived from yeast or yeast products for antirachitic activation nor any antirachitically activated unsaponifiable lipoids derived from yeast or yeast products during any period or periods that such licensee can purchase from the Company such substances, of equal or better quality, at prices not more than in excess of the actual cost to such licensee of such material purchasable by it (save for such prohibition) outside the United States for importation into the United States with duty and transportation charges paid.

VI. It is understood that the Foundation is negotiating with certain pharmaceutical manufacturing companies for the grant of licenses under the Foundation patent rights for the manufacture and sale of antirachitically activated unsaponifiable lipoids for medicinal and pharmaceutical purposes. If, in the opinion of the Foundation, the successful conclusion of such negotiations requires it, then it is agreed by the parties hereto that as to such licensees only and as to such licenses only for antirachitically activated unsaponifiable lipoids for sale for medicinal and pharmaceutical purposes and not for sale to any other licensees of the Foundation the restrictive provision of paragraph V above shall not apply.

VII. Whereas Steenbock, the inventor above named, has not yet determined upon the dosage or degree of antirachitic activation for the contemplated licensed operations of the Company with the precision desirable for commercial operations, it is agreed by the parties that the licenses hereby granted the Company shall begin from the date hereof and extend over a period of two years from a date sixty (60) days after the Company shall indicate its approval of or agreement on the matter of dosage or of degree of antirachitic activation of its licensed product foil yeast. It is understood that Steenbock will proceed with diligence to determine and advise the Company regarding this matter of dosage or degree of antirachitic activation and the Company agrees that it will with diligence thereafter and in good faith consider such recommendations and test the same to the end of reaching an early approval thereof or mutual agreement regarding the matter.

VIII. The Company agrees to pay the Foundation in full payment for the licenses hereinabove granted, the minimum sum of FIFTY THOUSAND ($50,000) DOLLARS payable as follows:

TEN THOUSAND ($10,000) DOLLARS on the execution of this agreement;
TEN THOUSAND ($10,000) DOLLARS on the date of the beginning of the two-year period provided for above in Paragraph VII and
TEN THOUSAND ($10,000) DOLLARS semiannually thereafter until said FIFTY THOUSAND ($50,000) DOLLARS is fully paid.

The Company agrees, moreover, that at the end of said two-year period it will review its licensed operations, and in good faith, based upon the profitableness and general value and benefit of the licensed inventions to the Company during said period, make such increased payment, if any, therefor to the Foundation as shall, in the judgment of the Company, be fair and reasonable.

IX. The Foundation hereby grants the Company an option to extend the licenses hereinabove granted for an additional term of five (5) years and also grants the Company an option to extend the licenses hereinabove recited for such period beyond said five (5) years extension as will constitute the balance of the full term and life of any United States Letters Patent of the Foundation hereinabove referred to, it being understood that the said options are independent and may be independently and successively exercised by the Company and that the amounts payable by the Company to the Foundation as full royalty during the term of either of such extended licenses shall be a minimum of $25,000.00 per year and shall be such amount plus an amount, if any, which shall be determined and fixed by the Company at the end of each year after reviewing its licensed operations for such year and in good faith based upon the profitableness and the general value and benefit of the licensed inventions to the Company during such year, and which shall appear, in the judgment of the Company to be fair and reasonable. It is understood and agreed that each such extra amount

Digitized by Google

determined and paid by the Company in excess of the $25,000.00 per year minimum shall be considered independently of any such amount of the same character which may have been paid theretofore or which may be paid thereafter. Each of the options hereby granted may be exercised by the Company and the extended licenses thereby secured to the Company at any time while license rights of the Company are in force and that written notice to such effect deposited in the registered mail and addressed to the Foundation shall be a sufficient exercise of each of said options.

X. The Foundation agrees that the name "Steenbock" and the title "The Wisconsin Alumni Research Foundation" may be used by the Company in advertising its products made under the license granted hereby, but to the extent only as follows:

(a) The Company's advertising which includes said name and/or said title shall be of a dignified and ethical character and not extravagant and not sensational;

(b) The Company's advertising which includes said name and/or said title shall so far as it advances therapeutic claims for its advertised products arising from inclusion therein of any invention within the Foundation patent rights, confine said claims within the limits of fact statement to be defined by the Foundation promptly hereafter;

(c) The Company's advertising which includes said name and/or said title shall be accompanied by a legend or phrase as follows:

> "Made under the Steenbock process as licensed by the Wisconsin Alumni Research Foundation."

(d) No restriction shall ever be imposed on the Company's advertising under the provisions of this paragraph beyond restrictions which the Foundation has imposed, and/or shall impose, upon all of its other licensees under the Foundation patent rights.

XI. Promptly upon the execution of this agreement the Company undertakes to disclose to the Foundation or to Dr. Steenbock the full recommendations of the Company's patent counsel as to the procedure and means for improving the Foundation's patent rights and the Company undertakes further to instruct its attorneys to cooperate to the fullest extent with Dr. Steenbock and/or the Foundation's patent counsel to effect such improved status of the Foundation's patent rights.

XII. It is understood and agreed that the parties, as promptly as possible hereafter, will endeavor to agree on suitable provisions to be incorporated in this agreement, or a supplemental agreement, affecting their ancillary or incidental respective obligations. As examples of such matters on which the parties will endeavor to reach such agreement are the following:

(a) The effect of a final and determinative decree by a court of competent jurisdiction adjudging the claims of the Foundation patents which cover the licensed operations of the Company to be ineffective to protect the Company's operations under the licenses hereby granted;

(b) The effect of a final and determinative decree by a court of competent jurisdiction enjoining the Company from continuing its operations or any of them under the licenses hereby granted.

(c) The institution and maintenance of suits against infringers of the Foundation patent rights, insofar as such infringement may arise to the prejudice of the Company's rights under the licenses hereby granted;

(d) The rights of the parties in and to any future patentable inventions which may be developed by the Company by way of improvement on the subject matter of the Foundation patent rights under which the Company is licensed;

(e) The rights and obligations of the parties in the event that the Company is sued by any third party for patent infringement arising from the operations of the Company under license from the Foundation.

In witness whereof the parties have hereunto affixed their corporate seals and caused these presents to be signed, THE WISCONSIN ALUMNI RESEARCH FOUNDATION, by its agents, and THE FLEISCHMANN COMPANY, by its officers, thereunto duly authorized by their respective Boards of Directors.

[CORPORATE SEAL] THE WISCONSIN ALUMNI RESEARCH FOUNDATION,
By W. S. KIES,
HARRY STEENBOCK.

[CORPORATE SEAL] THE FLEISCHMANN COMPANY,
By JOSEPH WILSHIRE, *President.*

Digitized by Google

STATE OF NEW YORK,
County of New York, ss:

On the 8th day of August, 1928, before me came W. S. KIES and HARRY STEENBOCK, to me known, who being by me duly sworn, did depose and say that they reside in Scarboro, Westchester County, New York, and in Madison, Dane County Wisconsin, respectively; that they are the agents of The Wisconsin Alumni Research Foundation, the corporation described in and which executed the above instrument; that they know the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that they signed ther names thereto by like order.

BERNICE SINCLAIR,
Notary Public, Bronx County.

STATE OF NEW YORK,
County of New York, ss:

On the 8th day of August, 1928, before me came JOSEPH WILSHIRE, to me known, who being by me duly sworn, did depose and say that he resides in Greenwich, Fairfield County, Connecticut; that he is the President of the Fleischmann Company, the corporation described in and which executed the above instrument; that they know the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that they signed their names thereto by like order.

BERNICE SINCLAIR,
Notary Public, Bronx County.

Memo re agreement of August 8, 1928, between THE WISCONSIN ALUMNI RESEARCH FOUNDATION and THE FLEISCHMANN COMPANY:

It is understood by the parties that the statement of permissible claims for the Company's advertising referred in paragraph X, subparagraph (b), shall include a provision whereby the Company's advertising use of the name "Steenbock" (beyond the use thereof in the legend of said paragraph) shall be submitted in advance for approval to a Trustee of the Foundation in New York City, appointed for the purpose, and that such approval shall not be unreasonably withheld or delayed.

MARCH 9, 1938.

Mr. WARD ROSS,
General Counsel, Wisconsin Alumni Research Foundation,
Chicago, Ill.

DEAR WARD: In reply to your letter of March 4, we are sending you copies of the Whittier patents, which we feel are valid. However, we have done some work along this line and feel that this is a rather expensive process. We will be interested in getting your opinion as to its validity.

With respect to the Chesney matter, all I know is that 35 cents per million units was quoted to General Baking Co. I do not know whether the material was activated by ultraviolet rays or the sun's rays.

As my plans now go, I will be in Chicago on Tuesday, March 16, on a rather hurried trip, due to the fact that I am sailing for England and the Continent on Friday noon, March 18. I will 'phone you upon arrival to make a definite date.

I have not answered the Dean's letter concerning shrimp waste as a source of Vitamin D, because I have judged that he has been away all this time and hoped to talk it over with him in person. If he has returned, please tell him for me that I thank him for sending this information. Dr. Waddell has done considerable work along this line and I think it would be interesting for Dr. Waddell and Dr. Scott to discuss this question the next time they get together.

With kindest personal regards and looking forward to seeing you next Tuesday, I remain

Very truly yours,

KENNETH T. KING,
Manager, Fine Chemicals Division.

Digitized by Google

E. I. du Pont de Nemours & Co., Inc.,
Wilmington, Del., March 5, 1940.

Mr. L. D. Barney,
The Wisconsin Alumni Research Foundation,
Madison, Wis.

Dear Dave: In reply to your letter of February 24 we are very much interested in modifying our contract with respect to the maximum and minimum provisions in the baking field. In fact, we believe the simplest way to handle this question is to delete from our present contract the clause specifying maximum and minimum provisions. This, of course, was explained to you over the telephone in our recent conversation concerning General Baking. I believe unless some change is made in the maximum and minimum provisions all business in this field will be lost by the licensees of the foundation.

Very truly yours,

Kenneth T. King,
Manager, Fine Chemicals Division.

Wisconsin Alumni Research Foundation,
Madison, Wis., March 14, 1940.

Mr. Kenneth T. King,
E. I. du Pont de Nemours & Co.,
Wilmington, Del.

Dear Ken: This will acknowledge receipt of your letter of March 5 regarding the maximum and minimum price provisions with respect to the baking field. Shortly, Ward will send Art either a letter agreement or supplemental contract deleting this provision from the contract.

In the meantime, the gentlemen from the H. C. H. Co. called at the office again. They tell us they have a bakery group pretty well sold on their powdered milk with vitamin D incorporated therein. While they cannot give us any positive statement as to their annual consumption of D units, at the outset it probably would be ten to fifteen billion units per year.

They have received a quotation from General Mills at a price of 60 cents per million, but they prefer to do business through you and the foundation, for many reasons, one of which is that they desire to have their customers use the foundation seal on the bread label.

Will you kindly let us hear from you at your early convenience as to what price you would quote these people for vitamin D in sesame oil for use in milk powder for bread production. You can make your quotation on the assumption that the maximum and minimum price provisions in the contract will be deleted prior to the time the order is placed.

Very truly yours,

Wisconsin Alumni Research Foundation,
L. D. Barney, *Business Manager.*

Wilmington, *July 26, 1932.*

Lever Bros. Contract.

Mr. S. A. Atkins,
Sales Manager, Acetol Products, Inc., 260 West Broadway, New York City.

This morning I reported to Mr. Protto and Mr. Robinson regarding conversation with Dean Russell and also the known facts concerning Lever Bros. business. It was Mr. Protto's feeling that we should raise our prices as much as possible and should not sell the material cheap.

My analysis of the information that you secured this morning from Standard Brands is that they are beclouding the issue when they quote on irradiated yeast. I do not believe Standard Brands are in position to quote on irradiated ergosterol the same as you can quote. In some way you must get this fact across to Reeves and in some way it is necessary to let Reeves know that unless we can make a satisfactory deal as to minimum payments received during the coming year from Lever Bros., they may not be able to obtain irradiated ergosterol at all. I think

Digitized by Google

that you should find some excuse for seeing Reeves shortly and talking to him so as to be able, in conversation, to get across to him the fact that we need to have a guaranteed minimum business of about $30,000 the first year from Lever Bros. in order to meet the conditions which the Wisconsin Alumni Foundation are imposing upon us.

The situation with Fleischmann is that their renewal time comes next year, when they will have to pay $25,000 minimum and we do not believe that they will ever submit to such a figure, so if Lever Bros. tie up with Fleischmann now because Fleischmann promises to put in a plant to produce stuff for them, they will be in a bad position a year from now. You can also make plain to Reeves that we seem to have the only practical source of ergosterol and have allowed claims on our patent application for its isolation.

Please let me know what plan of action you work out.

GEORGE B. BRADSHAW,
Vice President, Acetol Products, Inc.

ACETOL PRODUCTS, INC.

INTEROFFICE CORRESPONDENCE

Attention of: Mr. George B. Bradshaw, Vice President
Subject: Lever Bros. Contract.
To: Wilmington Office.
From: New York Office.

Date 7/27/32.

This acknowledges your letter of the 26th with reference to our selling vitamin D to subject concern.

It seems obvious to me that we should always try to get the maximum price for any of our goods, keeping in mind the possible potential volume and competitive conditions.

According to authentic price information which we have secured, Fleischman have been selling and offering vitamin D at slightly less than $1.00 per 1,000,000 Steenbock rat units. This is what influenced my suggested price of $1 to Lever Bros. and I was very much surprised when you informed me that Fleischman was not in a position to furnish irradiated ergosterol. If this were true, I apparently had gone too low on our initial price, in view of the fact that we were the exclusive source of supply. From Mr. Loeffler's (of Fleischman) conversation with me, and the information which you subsequently obtained, it seems to be definitely established that Fleischman can furnish irradiated ergosterol.

With this in mind and with the desire to increase our own profit, I will go over the matter very carefully with Mr. Reeves and believe I can learn the price which Fleischman has quoted. I will carry out your suggestion with reference to our payment to the foundation in my negotiations with Mr. Reeves and you can be assured that if there is the remotest possibility of boosting the price or getting a maximum guarantee of $30,000 for the first year, this will be done.

In connection with the proposed plant of Lever Bros., I understand that this plant is practically completed and this information apparently is true because I doubt that they could construct a $5,000,000 plant between now and September. It is my opinion that Lever decided to go into the food shortening field and tried to blast their way into top place by a huge advertising program. I believe that the addition of vitamin D was sort of an afterthought and that Lever believes that this additional selling point for the food shortening will give that little extra stimulus that will put their project over. I question the Foundation's business judgment in licensing Lever as against Procter & Gamble but, after all, we have an actual condition confronting us and theorizing isn't going to pay us any dividends.

There is one more thought in my mind and that is the reason for Mr. Reeves' silence if what Dean Russell told you is true; namely, that the license has already been granted to Lever Bros. I have known Mr. Reeves for about 18 years and know that his word is about as good as his bond and he promised faithfully to let me know the moment that they were ready to proceed and I am just wondering whether Dean Russell finally decided to concede to Lever Bros.' requests in the matter of potency and has assumed that they have accepted his proposal. If, for some reason, Lever does not wish to go ahead with this project because of

Digitized by Google

present business conditions, Dean Russell may be in for a rude awakening and may be able to negotiate again with Procter and Gamble.

Unless something unforeseen happens, I will see Mr. Reeves at Cambridge Monday or Tuesday of next week.

S. A. ATKINS.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., July 18, 1935.

Mr. STUART A. ATKINS,
Director of Sales, Cel-O-Glass Section,
E. I. du Pont de Nemours & Co., Inc.,
Wilmington, Del.

DEAR MR. ATKINS: The delay in replying to your letter of July 8 has been caused by my absence from the city.

This will confirm your understanding of the fluid milk situation, and while we have not yet proceeded on the basis we outlined to you in New York, with reference to the suits, we will probably go ahead on a somewhat different basis than we originally discussed. In Michigan, for example, the attorney general has already given a decision that the addition of concentrates to milk is illegal, so that in that State it may be possible to bring the matter to a head without going into litigation. We have further decided that it would be unwise to start a large number of suits at one time but to limit the cases to one or two.

BREAD SITUATION

It is very difficult to put into a letter the various ramifications that now confront us in this entire bread field. Last week we had a very pleasant conference with Dr. Waddell, and we outlined to him in considerable detail the various factors in this picture, and asked him to bring you up-to-date on the situation. As we explained to you in New York, we cannot possibly consider licensing Commander Larabee for commercial baker's flour at the present time, inasmuch as General Baking has evidenced a desire to get back into the fold. Further, we could not have joint licenses for the activation of miller's flour to be sold to bakers and at the same time sell ergosterol to the baking industry because of the variance in cost. It is contemplated that the baker's flour would sell at no increase in price, so that it would be quite impossible to sell ergosterol to the baking industry in competition with this mode of procedure. Frankly, at the present time, I do not feel that as satisfactory a coverage could be obtained by the use of activated baker's flour as could be the case in the sale of irradiated ergosterol to bakers.

We are very interested in the proposal which you outline in the third paragraph of your letter. The only suggestion we have to offer is that the program be kept on as simple a basis as possible, together with a reduced number of bioassays per year. We feel that some mechanical check on the sale of ergosterol and the amount of bread produced, together with four bioassays per year, would be sufficient. Further, it would seem advantageous for us to figure the cost of the bioassays in the selling price of the ergosterol so that the baker would have only one fee to pay.

Dr. Waddell stated that it was his opinion that if General Baking came back into the picture a higher price for ergosterol should be charged. We discussed the possibility of a price of $1.25 to $1.50 per million Steenbock units.

CONTRACT MODIFICATION

We appreciate the situation which confronts your company under the terms of the existing contract as far as royalty payments are concerned. We are very glad to have your suggestion as to what you consider to be a fair revision of the license terms. We have not discussed this with the trustees, and as a matter of fact, we will not be able to do so for a few weeks, inasmuch as we probably will not have a meeting until August. Ross and I have discussed the matter to a limited extent and it is our opinion that if the Foundation waives the entire minimum guaranty that a fair and equitable royalty basis would be 10 percent. It is not our desire to work a hardship on any licensee with reference to royalty terms, however, we would be pleased to get your reaction to such a basis of royalty calculations.

We appreciate the sentiment expressed in the second paragraph of your letter on page 2, and we are glad to know that your company desires to continue as an integral part of this organization. Your desire to keep vitamin D from falling

Digitized by Google

into disrepute through the licensing of unwarranted products is certainly in harmony with the policy of the Foundation.

With respect to Spaulding and the Canadian bakers, we cannot at this time make any definite negotiations on the matter of ergosterol prices. As we explained to you in New York, we must exercise our option with National Foods to take over the entire business before we will be in a position to furnish these companies with ergosterol. We are using every effort, however, to bring these matters to a definite settlement, and I am quite sure we will do so as soon as we hear further from General Baking.

We will be very glad to receive your prospectus with reference to the development of the bread field by your company and we shall look forward to hearing from you at an early date.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
L. D. BARNEY, *Assistant to the Director,*

MEMORANDUM FROM KENNETH T. KING TO RALPH HORTON AND W. S. KIES

SEPTEMBER 19, 1935.

With respect to Mr. Kies' letter to Dean Russell, I am making the following suggestions to be passed on to Mr. Ward Ross, attorney for the foundation.

1. 20-percent royalty should be specified as to the bread and buttermilk fields.
2. 7-percent royalty should be specified as to the poultry field and other fields with the exception of the pharmaceutical field.
3. We would be willing for the foundation to grant nonexclusive license for the sale of vitamin D from ergosterol in the bread field to the Fleischmann Co., providing the price of the vitamin D in the bread field shall be stabilized and that an agreement be reached as to control and assay work.
4. Du Pont will have exclusive rights for the sale of vitamin D from cholesterol in the bread field.
5. Paragraph five of Mr. Kies' letter to Dean Russell be revised to state only that 5-percent royalty be paid for vitamin D from cholesterol or ergosterol sold to the pharmaceutical industry.
6. To hasten the completion of this agreement, we suggest that Mr. Ross come to Wilmington to consult with our legal department so that an agreement can be drawn up before the trustees' meeting on September 27.

CONFERENCE WITH DR. HOOPER OF WINTHROP COMPANY, THURSDAY, NOVEMBER 14TH, 1935, NEW YORK

Hooper said that irradiated cholesterol is no good as a commercial product because you cannot get the concentration—that is the ratio of possible concentration between cholesterol and crystalline vitamin D is about 1 to 1,000.

I called Dr. Hooper's attention to the recent advertisement by the Winthrop Co. of its new product, drisdol, appearing in a recent issue of the Medical Record, page 14. I told Dr. Hooper that this ad had just come to our attention late in the afternoon the day before, and that we had not had a chance to discuss it among ourselves at all. I said that I was not acquainted with the work of Dr. Lewis upon which the advertising claims were based, but that assuming the truth of the claims, I thought the ad was objectionable from the following two standpoints:

(*a*) The ad makes a direct comparison between drisdol and viosterol. Comparisons are odious and the result of this ad is disparagement of viosterol.

(*b*) By stressing in the ad the use of crystalline vitamin D in milk, it might be considered that Winthrop was conflicting with our food field and thus going beyond the scope of its pharmaceutical license.

Hooper was very firm in his conviction that the claim that one drop of drisdol in milk was equivalent to 10 drops of Viosterol in oil was justified by Lewis' 1935 experimental work. Hooper said that if Winthrop could not make this claim they might as well not put the product on the market because that was the only talking point they had over viosterol. He said that all of their work was wasted if this claim could not be used. I suggested that they could in any event use the claim of greater purity, but he said this meant nothing from a merchandising standpoint. Hooper first said that Dr Lewis' work on crystalline vitamin D in

Digitized by Google

propylene glycol solution was independent of Winthrop and that Winthrop had nothing to do with it. Later, however, he admitted that they had financed the study and had spent a considerable amount of money on it, including $15,000 for milk alone. He justified the advertising claim (although he admitted he had not seen the ad) by saying that it was a true statement and was not intended to disparage viosterol. Being true, he claimed the statement was justified, even though its effect was adverse to viosterol. He claimed that the product will be and is being sold as a pharmaceutical product, and is in no sense an encroachment on the food field.

With regard to the comparison between viosterol and drisdol, I asked Hooper how he would like it if our milk licensees said that 1 quart of irradiated milk was equal to 10 drops of viosterol. Hooper claimed that this would be an invasion of the pharmaceutical field by our milk licensees and that they would be selling milk as medicine.

I explained to Hooper that in my brief conference the day before with E. S. Rogers, Mr. Rogers agreed with me that the ad was objectionable in that it disparaged viosterol. Hooper said that Rogers apparently was not acquainted with the facts and Hooper made arrangements to see him at dinner after our conference.

Dr. J. M. Lewis was at the irradiation conference and we discussed this situation with him after the meeting. Lewis said that he had no opinion on the question of making comparison between different products, and that this was simply a matter of commercial ethics. Lewis said that the statement in the advertisement was true as a scientific fact, if modified in the following respects:

(a) The ratio should be 2 to 10 instead of 1 to 10.

(b) The statement should say: "Two drops of drisdol in the normal daily ration of milk is equal to 10 drops of viosterol in oil," rather than simply "two drops of drisdol in milk is equal to 10 drops of viosterol in oil."

Hooper said that the label on the drisdol product prescribes a dosage of 2 drops per day in milk and 10 drops if taken straight, or other than in milk. He does claim, however, that 2 drops would be sufficient in water, although there is no evidence on this.

Lewis gives two explanations of the fact that drisdol in milk is so much more effective than drisdol alone, or mixed with some other food:

[Hand written:] See Scott about Lewis' work.

(a) Two drops of drisdol given in 24 ounces of milk during the day results, of course, in a great dilution of the vitamin D. The dose, is, therefore, taken piecemeal during the day and results in greater assimilability. Dr. Keenan says that there is something in this argument.

(b) Another possible explanation is that giving the minerals and the vitamin D (milk and drisdol) at the same time is more effective than giving the minerals and the vitamin D separately.

[Hand written:] Then would not viosterol in milk have same effect.

Drisdol is perfectly soluble in milk.

Hooper says that he has a patent application covering solutions of both crystalline vitamin D and ordinary irradiated ergosterol in propylene glycol.

Re Crystalline Vitamin D.

CONFERENCE WITH J. A. KEENAN, NEW YORK CITY, NOVEMBER 15, 1935

Ross raised the question with Keenan regarding the advertising of Winthrop's new crystalline vitamin D product sold as drisdol, appearing in the Medical Record, page 14.

The statement in the advertisement that 1 drop of drisdol in milk is equal to 10 drops of viosterol in oil is based on the work of Dr. J. M. Lewis recently published (March 1935). Keenan felt that the statement of a ratio of 1 to 10 was not justified by Lewis' work. Lewis fed on two levels, 90 United States Pharmacopoeia units a day and 900 United States Pharmacopoeia units a day. He found that 90 units of drisdol in milk was sufficient, whereas 90 units of viostorol in oil was insufficient. He then found that 900 units of drisdol in milk was sufficient and 900 units of viosterol in oil was sufficient. Upon this basis he says he finds a ratio of 1 to 10 The fallacy is the same as found in the earlier work of Hess and Lewis in finding ratios which were later disproved between irradiated milk, cod liver oil, and viosterol.

If Lewis had fed viosterol at lower levels, for example, 300, 500, or 700 units per day, he might have found the ratio quite different than from 1 to 10. Keenan

Digitized by Google

could not say offhand whether there was any clinical work on viosterol in oil showing that less than 900 United States Pharmacopoeia units (10 drops) would be effective in curing rickets.

Keenan says the product used by Lewis was imported calciferol in a propylene glycol solution.

WARD ROSS.

[Handwritten:] Does Lewis article specifically state this. If calciferol, how can Winthrop claim that Lewis' work is clinical on their crystalline V/D. Lewis paper says "Yes."

MEAD JOHNSON & CO., INC.,
Evansville, Ind., May 1, 1933.

Mr. HORACE E. GUNN,
Wisconsin Alumni Research Foundation, Chicago, Ill.

DEAR MR. GUNN: In reply to your letter of April 25, may I say that it is difficult to understand why Mr. Rubenstein of the Galler Drug Co. should appeal to you in the action we took in selling our products. We discontinued the Galler Drug Co. for what we considered good and sufficient reasons and are selling this company none of our products. These reasons were no more concerned with the products which we make and sell under license from you than with all of our products. The fact is that we do not consider the Galler Drug Co. to be a satisfactory distributor of our products.

The fact that the other licensees have discontinued selling the Galler Drug Co. viosterol products is not at all involved in this matter. Our action was taken long before your instructions to discontinue the Galler Drug Co. from the viosterol list were received.

You understand, of course, that in contacting people of this kind, you are in a position of having to take the responsibility, so far as viosterol products are concerned, provided any of the licensees are selling other products of their manufacture to the party.

Licensees cannot make agreements among themselves in these matters and must, of course, take the position that they are acting under instructions from the Wisconsin Alumni Research Foundation. The revelation that that is not the case might prove to be very embarrassing, as you probably realize. My suggestion is that, in cases of this kind, you simply inform the inquiring party that your action was guided by a committee, operating under the Wisconsin Alumni Research Foundation, and that this committee does not reveal its reasons for taking any action of this kind.

I am of the opinion that some of the licensees are still selling other of their products and have informed the Galler Drug Co. that they are not extending most favorable prices on viosterol, because they have been so directed by you. If that is the case, you must back them up.

Trusting that this will assist you in clearing up the matter, we remain

Sincerely yours,

MEAD JOHNSON & CO., INC.,
W. N. LARSON, *Vice President.*

JUNE 29, 1931.

To: N. A. B.
From: W. N. L.

Replying to your letter of June 23, it is quite certain that if the product of any licensee is sold at less than the minimum price to the retail trade, the four other licensees will be at a disadvantage. However, as the price control feature is made possible by the interest of the Wisconcin Alumni Research Foundation, the interest of this organization is a primary consideration insofar as carrying out its wishes is concerned.

To our knowledge there have been very few departures from the suggested minimum price, and these departures have been confined to a very few relatively unimportant wholesale druggists whose objectives, unlike ours, are not to stabilize conditions in the drug trade. It is the legal right of any manufacturer to refuse to sell to a wholesaler or any other customer in fact, who will not carry out his wishes. I hope that it will not be necessary, but it is entirely possible that it may become desirable for the foundation to make the list of preferred jobbers a trifle

Digitized by Google

more exclusive than it is at the present time. We would work with the foundation in any reasonable steps in that direction. Better proof of our desire to have this matter straightened out could hardly be given, we believe.

The instances where departures from this minimum price have been made have had our attention, and so far as we know, "destructive irregularities" have been eliminated for the moment at least.

I might point out again that the minor disadvantages that the other licensees may suffer through the occasional sale of Mead's viosterol at less than the minimum price is more than offset by the fact that we have considered the list price as meaning something and actually recommended the list price, $6.75 per dozen 5 cubic centimeters viosterol is charged in less than dozen lots with the minimum price of $5.75 applying only when 2 dozen is purchased. In line with our desire that wholesale druggists make a fair profit, we have placed ourselves in a position of disadvantage. We believe it would be a constructive step for the other licensees to adopt a suggested schedule similar to ours. I am not ignorant of the fact that some of the licensees at least do not give their best price on products other than viosterol to any direct buyer when purchasing in less than dozen quantities. The fact that the best price is quoted on viosterol sold in any quantity is quite surprising when on other items, 1 dozen to a gross must be purchased in order to enjoy this minimum price.

While our friends, the other licensees, are acting entirely within their rights, an explanation of the reason for this departure from the usual policy on the part of some of the houses would be, indeed, interesting.

Yours very truly,

———— ————.

MEAD JOHNSON & CO.,
Evansville, Ind., December 22, 1936.

Mr. WARD ROSS,
Wisconsin Alumni Research Foundation,
Madison, Wis.

DEAR MR. ROSS: We would have no objection to the Foundation acting as a clearinghouse for information relative to those to whom wholesale terms on viosterol and cod-liver oil with viosterol are extended, except we wonder if such action might not be construed as a violation of law. Anyone investigating this activity might well inquire as to why this was done, if some action which could be construed as collusion or restraint of trade were not contemplated.

This, of course, is a question upon which you can pass better than I, but I do think you should give it some consideration.

Sincerely yours,

MEAD JOHNSON & CO.
(Signed) W. N. LARSON, *Vice President.*

MEMORANDUM TO DR. RUSSELL

NOVEMBER 6, 1935.

As you know, the usual procedure in handling requests of wholesale drug concerns with respect to their addition to the approved wholesaler list for the sale of viosterol products is for the foundation to send the name and address of this company to the five licensees. They, in turn, investigate the company and report back to us whether or not they favor the addition of the said company to the list. The general procedure set up several years ago was that a majority of the licensees (three) would constitute sufficient authority on the part of the foundation to add the name of the company to the approved list.

By reason of the manner in which these are handled, it is impossible for us to tell the licensee when we refuse their request anything other than the fact that the committee, which handles the request, did not approve their application, or, stated in another way, the committee voted in the negative. Obviously, we cannot say that our licensees did not favor the addition of this company to the group.

Sometime ago we sent the name of the Ira J. Shapiro Co., Inc., 45 East Eleventh Street, New York, to the licensees and they voted in the negative without giving any reason for their vote. Their letters merely stated that they saw no reason why this company should be added. The Shapiro Co. represents itself as a very ethical concern, and while it is probably of Jewish management, to date we have

Digitized by Google

not been informed of any unethical practices carried on by this concern. They further state that their company is now purchasing other pharmaceutical products from both Abbott and Winthrop, and they cannot understand why they should be excluded from the viosterol list.

They are more or less putting the foundation on the spot in this matter, and in answer to their numerous letters, we have told them that our committee, which handles these matters, would meet again in November, after which we would advise them further.

Unless the licensees have some good reason for not approving this company, I would appreciate it if you would raise this matter at the pharmaceutical meeting in New York. They may say that these matters are handled by their sales managers; however, their sales managers have already declined this man's application, and I think that the matter should rightfully receive the consideration of the other executives of the various licensees.

In considering these requests, we must realize that if we incur the animosity of the company to the extent that they are sufficiently antagonized to force an investigation into the manner in which these are handled, it might be extremely embarrassing. I do not know whether any wholesale drug concern could bring about such investigation, but, in my opinion, it would be prudent for the foundation to stay on the safe side.

L. D. BARNEY.

MARCH 30, 1932.

POTENCY OF VIOSTEROL

Mead Johnson, March 30, 1932.

Mr. Nielsen, Mead Johnson, long distanced Russell asking what, if anything, has been done relative to the change in potency of viosterol.

They have heard nothing further from the Federal Government.

Nielsen quite perturbed as to possibility of Federal officials starting action against manufacturers for failing to live up to Government requirements. Russell told Nielsen that he did not see how any action could be taken on the part of either the Foundation or the Foundation's licensees until the Government determined the new standard which would then replace the temporary standard set by Steenbock 2 years ago.

Russell understood that the Pharmacopeia committee had this matter now under advisement and that Federal officials were then awaiting such official Pharmacopeia action.

Russell asked Nielsen if they had received any specific communications from Federal officials, intimating that the Government intended to take action. Nielsen said, "No."

Russell said that Steenbock had received a communication from Dr. Cullen of the United States Drug Division and that he (Steenbock) had replied to same.

Owing to Russell's absence in the West, he had not been in close touch with this correspondence.

Nielsen wanted copies of such correspondence. Russell said he could not say whether the contents could be distributed to Mead Johnson (and the other licensees) until he had familiarized himself with the correspondence, both on the part of Federal authorities and Steenbock.

NIELSEN RAISES QUESTION OF VARIABLE POTENCY

Nielsen reported that at the pharmaceutical licensees meeting, in Washington, Government had reported two samples as containing 2½ times the present authorized Steenbock standard. Russell asked Nielsen flatly if Mead Johnson had in any way as yet modified the potency of their product along the lines of the claim which they had made that such should be done. Nielsen denied point-blank that Mead Johnson had altered the potency of their product.

NIELSEN ASKS FOR CHANGE IN POTENCY

Nielsen then said that Mead Johnson was about to make up and pack a large quantity of ergosterol, and in view of the impending action by the Government they felt was about to take, wanted Russell's approval to increasing potency on this new pack—2½ times or 625-Steenbock D units.

Russell said under no condition could such approval be given. That Mead Johnson had no warrant in changing the potency without the knowledge and

Digitized by Google

approval and consent, not only of the Foundation but also of the other four licensees.

Larsen wanted to know what they could do under their conditions? Russell told him they could pack a limited quantity on the old potency that would enable them to transact business until Federal authorities had determined the new standard, and all pharmaceutical licensees were appraised of a change that would be uniform throughout.

Larsen then said that there was a wide variation in potency among the five licensees as determined by the Government examination. Two had been found to be very much over standard and one, at least, below standard. The superpotent samples were not Mead Johnson, and Nielsen disclaimed knowledge as to whose samples were excessively potent.

Russell said that Steenbock had immediately secured samples from channels of trade and had made a provisional run of same but was unable to find any such variation in potency as Federal authorities had reported. These were being rerun to insure complete accuracy relative to potency.

Larsen was very anxious that Russell would write Mead Johnson in regard this whole situation even if he could not convey to Mead Johnson the contents of Washington's letter to Steenbock. A statement that such could not be given would be appreciated in this connection. Larsen appeared considerably perturbed at the possibility of the Government going after them.

Russell said he would see Steenbock in regard to this matter at earliest convenience and would doubtless write him.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
MADISON, WIS., *March 30, 1934.*

ABBOTT LABORATORIES, MEAD, JOHNSON & CO., PARKE, DAVIS & CO., E. R. SQUIBB AND SONS, WINTHROP CHEMICAL CO.

GENTLEMEN: Several questions have arisen in recent months which seem to require early consideration. These can be more readily discussed at a meeting of the Licensees of the Foundation.

1. The impending modifications involved in the matter of labelling Vitamin D products caused by the change from the Steenbock standard to those which are to be promulgated under the auspices of the American Pharmacopoeia.

2. Demand has been made for the sale of bulk or large package containers for use in hospitals only. Criticism is being made that under the restricted budgets of hospitals, the charity cases are not receiving the advantages that should obtain from this treatment.

3. Very severe criticism from certain prominent pediatricians has been lodged against the Foundation on account of the alleged high retail prices of certain Vitamin D preparations. The source and nature of these criticisms are such that they should be met by very earnest consideration.

We are, therefore, asking the Licensees of the Foundation to attend a meeting to be held at the Union League Club, Chicago, Monday, April 9, 1934, at 10 a. m.

Kindly notify us if your company can have representatives at this meeting.

Yours very truly,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
H. L. RUSSELL, *Director.*

CINCINNATI, *May 10, 1940.*

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill.

GENTLEMEN: We have an inquiry from the government for a substantial quantity of Irradiated Ergosterol and are wondering if we shall have to abide by the price schedule in our license agreement in quoting. In other words, would our quotation have to be the same as our minimum price to wholesalers, or could we figure on a reasonable profit basis taking our cost on such a large quantity for one shipment into consideration?

Since the date for opening the bids is next week it will be necessary for us to have your reply by return mail and we shall appreciate your prompt attention.

Very truly yours,

THE WM. S. MERRELL CO.,
THURSTON MERRELL, *President.*

P. S. We know that the price would have to be much lower than our price to wholesalers to secure the order.

Digitized by Google

MAY 13, 1940.

MR. THURSTON MERRELL,
President, The Wm. S. Merrell Co.
Cincinnati, Ohio.

DEAR MR. MERRELL: We acknowledge receipt of and thank you for your letter of May 10 which was received this morning. Under the present license agreement with your company and the other pharmaceutical licensees of the Foundation under the Steenbock patents the minimum price to be quoted to Government institutions is the minimum wholesale price as outlined in your contract, less two percent discount for cash if paid by the tenth of the following month.

All of the other pharmaceutical licensees of the Foundation have operated under this arrangement for some time. We note, however, your postscript which indicates that the quotation to the Government will have to be lower than the price to wholesalers in order to secure the order. We dislike to see your company or any of our other licensees lose business. If you think the time has arrived for the Foundation to give consideration to the lower quotations on the sale of Viosterol or Cod Liver Oil with Viosterol to Government institutions, we shall be glad to review the matter. We shall be glad to hear from you at your convenience on this subject.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
——— ———, *Business Manager.*

NEW YORK, *July 23, 1934.*

Dean H. L. RUSSELL,
Wisconsin Alumni Research Foundation,
University of Wisconsin, Madison, Wis.

DEAR DEAN RUSSELL: We are in receipt of a copy of the letter, dated July 19, 1934, which was written to you by Mr. G. L. Genz, domestic sales manager of Parke Davis & Co.

As we understand it, the license granted the licensees of the Wisconsin Alumni Research Foundation gives the Foundation only the right to establish the prices and terms at which viosterol in oil and cod-liver oil with viosterol are to be sold to the retail drug trade and the wholesale drug trade.

It is also our understanding that the Foundation does not wish to exercise any jurisdiction over the prices at which viosterol in oil and cod-liver oil with viosterol is to be sold by the retail drug trade to consumers.

Furthermore, the original intention of the Foundation in asking the licensees to reduce their prices on viosterol in oil and cod-liver oil with viosterol to the wholesale and retail drug grade was to lower the prices on these products to the consuming public.

We gave this matter our very serious consideration and wrote to all of the licensees, under date of July 19, 1934, as per copy enclosed and we firmly believe that our suggested full retail prices per package to the consumer and minimum retail prices per package to the consumer for viosterol in oil and cod-liver oil with viosterol are more in line with present market trends and the present economic market conditions than those proposed by Parke Davis & Co.

We are desirous of acting in harmony with all the other licensees of the Wisconsin Alumni Research Foundation in regard to the stabilization of the market for viosterol in oil and cod-liver oil with viosterol. However, we firmly belifve that it is necessary to establish a schedule of minimum retail prices to the consumer such as we have suggested in order to bring about such stabilization.

Fundamentally, of course, it is illegal under the Sherman antitrust law, the Clayton Act, and the Federal Trade Commission Act for any manufacturer to enter into any agreements or understandings, implied or otherwise, regarding the maintenance of specific resale prices at retail or wholesale with any of his retail or wholesale distributors.

As we are going to press with a new price list within the next 5 days, we would appreciate your reaction to the proposal we submitted to all other licensees of the Wisconsin Alumni Research Foundation regarding the establishment of a schedule of full retail prices to the consumer and minimum retail prices to the consumer on viosterol in oil and cod liver oil with viosterol.

Very truly yours,

E. R. SQUIBB & SONS,
R. D. KEIM.
Vice President-Director of Sales.

Digitized by Google

Excerpt From Conference With Mr. Cain of Abbott Laboratories, North Chicago, Illinois, January 23, 1939

Telephone conference with Dr. Lescohier of Parke, Davis February 13, 1939:

Under date of February 9 Dr. Lescohier wrote to Ross inquiring as to whether the Foundation had made any decision in connection with royalty modification for the reason that they had to decide the matter with reference to Irradol A in the very near future. Ross then explained that we had intended to write to Dr. Lescohier and try to see him in Detroit some time this week; that the Trustees had authorized us to negotiate a lower royalty base with reference to products in which irradiated D is not now being used; that we wanted to discuss this with him in Detroit, and consequently call a meeting of the licensees. I pointed out that the Foundation could not itself take final action in this matter.

Dr. Lescohier then wanted to know if we could assure him that the Foundation would agree to a royalty base not less favorable than that discussed with him in New York, namely, 22¢ per million units. He said that if he could have this assurance they would proceed to make the change in Irradol A. He indicated that they were right now in the process of revising the label and making other changes in the product, and were anxious to know immediately. I promptly gave him the requested assurance, namely, that the Foundation would agree with respect to new products to a royalty rate of not greater than 22¢ per million. On this basis, Dr. Lescohier said they would go ahead immediately.

I then made a tentative appointment with Dr. Lescohier for Wednesday afternoon at Detroit to discuss this entire subject. I subsequently called Russell and Barney at Madison and they agreed that it was proper under the circumstances to give Dr. Lescohier the requested assurance. They also confirmed that it would be desirable to go to Detroit Wednesday and hence I agreed to wire Dr. Lescohier.

Matters to discuss with Lescohier are as follows:

1. What if anything Parke, Davis would do if we went as low as 10¢ to 15¢ per million units.
2. If possible, get volume figures on Irradol A.
3. Discuss matter of concentrated Viosterol for tetany, arthritis, etc., along the line of our Merrell situation.
4. Discuss dates for possible pharmaceutical meeting.

In discussing the matter with Russell and Barney, it was suggested that we communicate with Abbott and ascertain when Clough will return and whether the Abbott people could participate in a meeting the latter part of February.

* * * * * * *

Squibb has a two years supply of tuna liver oil on hand, but they could find plenty of other uses for this oil in the poultry field and elswhere and the existence of this inventory would not prevent Squibb working out the proposed arrangement with us.

It was the opinion of Dr. Anderson and Mr. Lewis that because of the name and character of promotional work on the product in the past they could not use Irradiated ergosterol in Navitol. They could, however, use Irradiated D in ABDG capsules, Adex Tablets, and Vigraine capsules.

Dr. Anderson raised the question as to whether royalties would be calculated upon the labeled potency of the product or the actual number of million units used. He pointed out that in every product they put a minimum of 15% excess of the labeled potency. In Dicalcium phosphate compound with viosterol, they use about 1,000 units per tablet and per capsule, whereas the labeled claim is 660 units, for the reason that there is a considerable loss of D potency in the process of manufacturing.

Lewis raised the question of royalties on what he termed high priced products, obviously referring to Dicalcium phosphate compound with viosterol. The royalties on this product range as high as 80¢ per million units in the smaller sized packages. We pointed out that there were two objections to making such a change. First, that we had no authority from the Trustees to change royalties on any present licensed products and second we felt that making such change would probably require the unanimous agreement of all the licensees. Lewis did not press this point. He did, however, suggest that we have a maximum royalty on a per million unit basis such as 50¢ or 75¢. He thought that the spread between 15¢ and 80¢ or 90¢ was too great. No final decision was reached on this matter of a maximum amount. In this connection we further pointed out that a reduction in Foundation income from present products would necessitate a higher rate on a per million unit basis for the new products in order to make up the loss to the Foundation, inasmuch as the Trustees were not willing to make this modification

Digitized by Google

unless the present income from the pharmaceutical group was at least increased slightly.

It was mentioned during the discussion that when Delsterol is combined with dried milk powder there is a 20 to 40 per cent loss in D potency.

It was the opinion of both Lewis and Dr. Anderson that the Foundation should think in terms of a maximum of 15¢ per million. They did indicate that a difference of one or two cents might not be sufficient to determine their decision. Lewis said that the figures he gave us in Jan. on their natural D consumption were based upon label claims and not upon the actual amount of D used in these various products.

We explained to them our program of determining the new royalty and sending out a letter on the subject announcing the new royalty without calling a meeting of the licensees, and we explained why we did not wish to call a meeting. Neither Mr. Lewis nor Dr. Anderson expressed any opinion on this procedure and merely indicated that it was the Foundation's problem. They implied that they did not object to this procedure.

When we told them that Parke Davis was proceeding immediately with one product on our assurance of a royalty of not greater than 22¢ a million, Lewis indicated that Squibb had one product, not mentioning which product, that might require rather rapid action if a change were to be made.

A Directors meeting of the Squibb Co. was scheduled for today, February 23, and it was indicated that this matter would be brought up at the meeting. Lewis is to call us and advise us what the Squibb Co. will do at the 15¢ royalty figure. If we do not hear from him by Tues, we are to call him for further details.

HIGH POTENCY VITAMIN D

We outlined the high potency D situation both with respect to Merrell and Winthrop. Their reaction was first that Squibb would have no objection to Merrell's continuing to sell its concentrated viosterol if we could line up Merrell on its regular viosterol from the standpoint of container size and price. We indicated that this latter could be accomplished. Secondly, Dr. Anderson expressed the thought that we might limit this proposition to a specific product of a specific potency such as a 50,000 unit capsule. This means that Parke Davis, Squibb and Winthrop have definitely committed themselves as not objecting to allowing Merrell to proceed. Abbott has not as yet made up its mind.

AMA PATENT CONFERENCE MARCH 16

Dr. Anderson asked if the Foundation had received an invitation to this meeting, and we replied that we had and Dr. Steenbock had received one too. He said that he had been invited to speak on the program along with Dr. Leschier as representing the manufacturers on the subject of the wisdom of medical patents from the standpoint of public welfare. He indicated that one of the reasons for calling this conference as he had heard it, was that the AMA is somewhat concerned about the large number of medical patents being taken out by University laboratories. He stated that it was his opinion that as long as the Foundation had been invited to attend that we could not very well stay away, even though an attack might be made on the Foundation at the meeting. He also felt that he could not very well refuse the invitation and Dr. Leschier felt the same way. This is interesting in view of Dr. Steenbock's comment expressed to Barney on February 21, wherein he thought the Foundation should not attend in any official capacity, but that he, Steenbock, would go merely as an observer and if called upon to speak he would present his views on medical patents, as representing his personal opinion and not the policy of the Foundation.

APRIL 21, 1936.

Dr. H. L. RUSSELL,
Wisconsin Alumni Research Foundation,
Madison, Wis.

DEAR DOCTOR RUSSELL: Enlosed find the following vouchers covering royalties as per statements attached·

Voucher No. 40537	$536. 88
Voucher No. 40536	1, 748. 39
Voucher No. 40535	3, 416. 85
Voucher No. 40534	10, 837. 51

A total of $16,539.65.

Digitized by Google

In view of the lack of protection which we have at the present time on the trade name "Viosterol," as well as on the patent, we feel very strongly that the royalty should be reduced, or at least until such a time as we and the other licensees are afforded the protection which we once had.

We are paying 10-percent royalties on no other license arrangement; in fact, the limit has always been 5 percent.

It was argued by your trustees that under our arrangement with the Foundation we were given certain benefits of price stabilization which was well worth the additional 5 percent. Since that time both the price structure and patent situation has apparently collapsed.

How long will it be, in your opinion, before we can expect an adjustment in the royalties?

Yours sincerely,

S. DE WITT CLOUGH, *President.*

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., August 17, 1936.

Dr. CARL NIELSEN,
Abbott Laboratories, North Chicago, Ill.

DEAR MR. NIELSEN: I wish to acknowledge receipt of your letter of August 14, which refers to the manuscript I sent you some time ago entitled "Study of the Comparative Therapeutic Value of Two Viosterols" by Drs. Smith and Owens of Howard University.

Dr. Volwiler has already given me his opinion on this work, and I believe you are familiar with the comments of Dr. Anderson, of E. R. Squibb & Sons. With reference to response from Dr. Cox, of the Mead Johnson Co., I may say that Cox conferred with Mr. Larson, and he held much the same opinion as the balance of the committee in that publication of this article should be discouraged and in the event that it was published, it would be necessary to drastically revise the contents of the manuscript. From the outset, of course, we have been opposed to publication of this paper in any from. We have advised Dr. Smith that it was necessary to get the opinions of the pharmaceutical committee, and we intend to confer with them in the near future advising them that publication of the work is not desirable.

With reference to the data contained in this paper and future clinical trials, I agree with the statements made in your letter and hold the same opinion that you do in regard to very careful checking by different investigators as being essential in order to bring out apparent differences. It certainly is a fact that no good would result from the publication of the work of Smith and Owens.

Thanking you and with best wishes, I am

Sincerely yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
HENRY F. SCOTT,
Director of Biological Research.

JULY 6, 1936.

To: J. F. A.
From: A. W. L.
Copy: S. D. C.

I have a copy of your letter of June 30, addressed to Dr. Henry T. Scott, and concerning comparative studies of two viosterols.

Presumably the products in question are material made under the Steenbock process and that prepared by the American Mills subsidiary.

If this article is published the Steenbock group are certainly in the position of being hung with their own rope. I should like to see the publication suppressed but am pretty certain that Mead Johnson will see that it is published since they are no longer vitally interested in viosterol. Certainly anything that can be done to delay publication would be advisable.

Very truly yours,

S. D. C.: A copy of the J. F. A. letter was sent to Mr. Nielsen.

Digitized by Google

Study of the Comparative Therapeutic Value of Two Viosterols[1]

(By Alonzo deG. Smith, M. D., and Nolan A. Owens, M. D., Washington, D. C.)

[This study was made possible by a grant from the Wisconsin Alumni Research Foundation, March-June 1936]

INTRODUCTION

For some time viosterol has been manufactured according to a method devised by Dr. Harry Steenbock of the University of Wisconsin. This viosterol is made by irradiation of ergosterol in oil by ultra-violet light. This product has proven efficacious clinically. Recently a new viosterol was put on the market and defined as "activated ergosterol in oil" and made by exposure of the ergosterol to the cathode rays. We are not familiar with any clinical studies showing the therapeutic value of this preparation. Accordingly we set ourselves the problem of making a comparative study of the two viosterols.

We hospitalized twenty-two Negro infants between the ages of three and twenty-eight months showing various degrees of rickets, the criterion being a roentgenogram of the wrists. Each child was put on a diet suitable for its age and weight, all antirachitic substances being excluded except the test material. They were under the exclusive care of six graduate nurses and the writers. They were kept indoors during the period of study. An observation period of eleven to twenty-two days was instituted, during which time at least two X-rays and two Ca and P determinations were made. No case showed healing by X-ray at the time therapy was begun. They were weighed at frequent intervals and the TPR recorded daily.

A history, physical, urinalysis, and blood count was done on each. All had negative Wassermann and Mantoux tests. Measurements of length, circumference of head, chest, and sitting height were recorded on each at the beginning and at the end of the study. The twenty-two were divided according to age and degree of rickets as nearly as possible with our limited number. Each group of eleven was confined to one side of the ward. One group was given Squibb's viosterol, the other that put out by the American Pharmaceutical Company.

It was decided that for the experiment to be critical, we should use a viosterol unitage low enough to produce healing but not necessarily complete cure in the allotted six weeks of therapy. Conferences with Doctors Cox, Martha Elliott, L. Emmet Holt, Jr., and Nelson, suggested a unit range between 1,000 and 1,200 U. S. P. Despite the fact that all of the babies were Negroes which might suggest a need for a high minimum unitage, the writers finally decided that 800 units per day would be effective.

The therapeutic period was forty-two days, during which time each child had a weekly X-ray of the wrists and Ca and P determinations, the first, second, fourth, and sixth week.

Originally we started with eleven children in each group. About midway of the study, two mothers of babies of the Squibb group exerted pressure to have their babies removed despite our strong protest.

RESULTS

Roentgenograms.—For purposes of comparison the X-rays were divided into mild, moderate, and severe rickets. Charts 1A, 1B, 1C are self-explanatory. We were concerned with the degree and rate of healing.

Our interpretation leads us to believe there was no difference, i. e., the rate and degree of healing in the cases given APC viosterol was equal to that of those given Squibb's viosterol. In the case of J. S., severe rickets with no evidence of healing after four weeks, we believe the explanation that for him 800 units was insufficient to produce healing is tenable.

Ca and P Studies.—In general the Ca and P values do not show any significant difference in the total change in each group. This is shown in Tables 1A, 1B, and Graph I–IX the latter being an average of the series.

[1] From the division of pediatrics, school of medicine, Howard University, and Freedmen's Hospital, Dr. Smith, associate professor of pediatrics; Dr. Owens, resident in pediatrics.

Digitized by Google

The irregularity in Ca of PA (Graph I) and to a less extent of phosphorus may be explained on the basis of individual variation. During the last two weeks P. A. had pneumonia; the graph shows the calcium rose slightly and the phosphorus dropped but neither change is marked. There were no other clinical disturbances that appear related to other variations in the remaining graphs.

Nutritional Status.—The weight, general appearance, measurements of the head, chest, length, and sitting height showed increase and improvement in all of the children. These measurements were not greater or more significant than would be expected for the two months' period of study, and cannot be related to the administration of either viosterol.

CONCLUSION

A comparative study of nine cases of varying degrees of rickets receiving 800 U. S. P. units of Squibb's Viosterol daily with eleven comparable cases receiving 800 U. S. P. units of American Pharmaceutical Company viosterol shows no significant difference in rate or degree of healing as determined (1) by X-ray of the wrists and (3) Ca and P determinations on the blood.

(Signed) ALONZO DEG. SMITH, M. D.
NOLAN A. OWENS, M. D.

Digitized by Google

CHART 1A.—*Comparison of X-rays—mild rickets*

Group	Viosterol	Name	Film 1	2	3	4	5	6	Conclusion
1	SQ	P. A. 4 mos.	Definite evidence of healing in both. The rachitic process is more marked in A. E. hence the extent of healing appears greater.	Progressive healing is present. The degree and rate continue at the same level.	The increase in healing continues. No significant difference is observable in the two films.	The rate and degree of healing are progressive and to an equal degree.	The course continues at the same rate.	The rate and degree of healing have been progressive and equal.	Greater evidence of healing is present in A. E. because of the more marked process. Rate and degree are about equal.
	AP	A. E. 18 mos.							
2	SQ	M. J. 9 mos.	Mild rickets present in both, slightly greater in M. J. Healing has begun in both to the same extent.	Progressive healing in both at about the same rate but the degree is greater in M. J.	The increase in calcium deposition continues in both with M. J. showing the more obvious change.	Comparison continues as before with progressive repair of the rachitic process.	Healing continues in a similar manner.	The total change is greater in M. J.	The rate and degree of healing appear equal, though the total change is more obvious in M. J.
	AP	E. H. 5 mos.							
3	SQ	M. W. 5 mos.	Definite healing in the three with the total change a little greater in W. H.	Healing continues with the relative degree and rate being the same.	Increased healing in all to the same extent.	No difference noted in the three films as healing increases.	The progress is the same in all.	Comparison of degree and rate of healing reveals us important differences.	No difference is appreciated as regards rate and degree of healing.
	AP	D. P. 6 mos.							
	AP	W. H. 7 mos.							

CHART 1B.—*Comparison of X-rays—Moderate rickets*

Group	Viosterol	Name	Film 1.	2	3	4	5	6	Conclusion
4	SQ	S. S. 14 mos.	Beginning healing in both. The degree of rickets is slightly greater in S. S.	Continued healing with us obvious differences in the two.	Progressive repair of the rickets the same extent.	No apparent differences in calcification as the process continues to heal.	Healing continues. The rate and degree are the same in both.	The healing has continued progressively and equally in both.	There are no differences noted as regards the rate and degree of healing.
	AP	E. H. 16 mos.							
5	SQ	S. B. 13 mos.	Healing is very slight in both.	Repair of the rachitic process is more evident but no differences are appreciated.	Progressive healing to the same extent in both.	No difference in the healing rate and degree as it continues.	The course is progressively better at the same rate and to the same degree.	Equal healing in both which continues as before.	No difference in the rate and degree of healing.
	AP	B. B. 13 mos.							
6	SQ	H. P. 10 mos.	Repair of the process has begun in all to the same degree, with a slight increase in E. G.	Healing continues. No appreciable difference in rate and degree.	Healing is progressive and to the same extent in all.	No obvious difference as repair of the rachitic process continues.	Progressive repair with the rate and degree the same in all films.	No differences in the total healing.	There is no disparity in the rate and degree of healing.
	AP	V. D. 11 mos.							
	AP	R. L. 19 mos.							
	AP	E. G. 8 mos.							

Digitized by Google

CHART 1C.—*Comparison of X-rays—Severe rickets*

Group	Viosterol	Name	Film 1	2	3	4	5	6	Conclusion
7	SQ	R. E. 17 mos....	Healing is present to the same degree though it is very slight.	No appreciable difference—healing continues.	The degree of healing in R. E. is greater than R. B.	The same increase in the degree of healing in R. E. is apparent.	Healing continues. No change in the degree or rate is appreciated.	The rate and degree of healing are the same. Repair of the rachitic process continues.	Though film 3 and 4 show more evidence of calcification in R. E. the total change is the same in both.
	AP	R. B. 11 mos....							
8	SQ	C. B. 20 mos...	There is no healing in either film.	Healing is not evident in either film.	D. R. shows definite healing. C. B. shows less healing than D. R. J. S. shows no healing.	D. R. presents progressive healing and more marked than C. B. J. S. shows shows no beginning healing.	Progressive healing in D. R. which is slightly greater than in C. B. J. S. presents evidence of beginning healing.	The rate and degree of healing are greater in D. R. than in C. B. and very much greater than in J. S.	D. R. showed the greatest improvement, J. S. the least.
	SQ	J. S. 19 mos.							
	AP	D. R. 28 mos....							

Digitized by Google

TABLE 1A.—*Calcium determinations*

SQUIBB

No.	Name	Begin.	Weeks			
			1	2	4	6
1	H. P.	9.8	10.3	9.3	10.2	10.9
2	P. A.	10.5	10.2	11.5	10.2	10.5
3	R. E.	10.2	10.1	10.9	10.9	10.6
4	R. W.	10.2	10.7	11.3	10.9	10.8
5	S. B.	9.2	9.2	10.0	10.4	10.2
6	S. S.	9.9	9.8	10.9	10.4	10.9
7	M. J.	10.8	9.9	----	11.4	10.9
8	C. B.	9.5	10.2	11.3	11.9	11.9
9	J. S.	10.2	10.5	10.6	11.1	10.9
Average		10.0	10.1	10.7	10.8	10.8

A. P. C.

1	E. G.	10.8	11.2	----	11.4	10.7
2	R. L.	10.1	10.5	11.6	10.8	11.3
3	V. D.	10.6	10.9	10.1	12.5	11.2
4	A. E.	9.1	9.5	9.9	10.2	12.1
5	R. B.	9.4	9.4	9.9	10.2	11.4
6	W. H.	10.6	10.2	11.2	11.2	11.3
7	D. P.	10.7	11.3	10.9	11.6	11.2
8	B. B.	9.8	10.5	10.6	11.2	10.8
9	E. H.	9.6	9.5	11.3	10.5	11.1
10	E. H.	11.2	9.7	10.9	12.0	12.4
11	V. R.	10.5	9.2	10.2	11.2	11.1
Average		10.2	10.1	10.7	11.2	11.3

TABLE 1B.—*Phosphorus determinations*

SQUIBB

No.	Name	Begin.	Weeks			
			1	2	4	6
1	H. P.	2.7	4.4	4.6	4.7	4.4
2	P. A.	5.4	5.1	4.5	5.3	4.8
3	R. E.	3.7	2.8	3.0	4.2	4.4
4	M. W.	5.3	5.5	6.5	5.7	5.0
5	S. B.	3.4	3.1	3.8	4.5	4.7
6	S. S.	2.8	3.0	3.3	3.4	3.8
7	M. J.	5.3	5.3	----	5.7	5.0
8	C. B.	2.7	2.4	4.2	4.0	3.0
9	J. S.	3.5	3.4	3.3	2.9	3.6
Average		3.9	3.9	4.2	4.5	4.3

A. P. C.

1	E. G.	3.2	4.0	----	4.2	6.0
2	R. L.	3.2	3.5	4.0	4.6	5.3
3	V. D.	3.0	2.7	2.6	5.5	4.7
4	A. E.	2.4	4.0	3.1	4.8	5.0
5	R. B.	3.3	2.5	2.6	3.5	4.0
6	W. H.	4.8	5.5	4.8	5.7	5.3
7	D. P.	4.6	4.0	5.7	4.5	5.5
8	R. B.	3.8	3.4	3.9	3.4	4.4
9	E. H.	5.0	4.6	5.3	5.3	5.0
10	E. H.	4.4	3.1	5.1	5.7	5.3
11	D. R.	2.7	2.8	3.6	4.7	3.4
Average		3.7	3.6	4.1	4.7	4.9

Digitized by Google

PHOTOGRAPHS

By way of illustrating our interpretations of X-ray films we include a photograph of the X-ray (positive) of the wrists of three groups of two children each from the mild, moderate, and severe classification, one picture taken at the beginning of the study and the other after the six weeks' period of therapy, 12 photographs in all, plus a picture of the wrist of each of the six children. The photographs should be compared according to the scheme following:

Mild

(1) Sq—0—M. J. Compare with AP—0—E. H. (3)
(2) Sq—6—M. J. Compare with AP—6—E. H. (4)

Moderate

(1) Sq—0—S. S. Compare with AP—0—E. H. (3)
(2) Sq—6—S. S. Compare with AP—6—E. H. (4)

Severe

(1) Sq—0—C. B. Compare with AP—0—D. R. (3)
(2) Sq—6—C. B. Compare with AP—6—D. R. (4)
Note: Also, in each group compare (1) and (2); (3) and (4).

ADDENDA

I. Photograph of Staff.
II. Photograph of Ward at Feeding Time.
III. Fourteen pictures of typical children and wrists.

NEW BRUNSWICK, N. J., *June 13, 1932.*

YEAST RESIDUE FROM ALCOHOL PLANT

Mr. F. A. CANON:
(Attention Dr. J. Waddell)

I note your report of June 6, covering the week ending June 6 as well as a copy of your memorandum to Wm. F. Krug Jr., at the alcohol plant.

According to my reading of the contract with Wisconsin Alumni Research Foundation, we are not at liberty to use yeast in conjunction with irradiated ergosterol, this field being reserved exclusively to Fleischmann. In view of this fact I do not think we ought to waste time or money on experiments in connection with yeast.

———— ————,
President.

JANUARY 6, 1937.

Dr. H. W. ELLEY,
Associate Chemical Director,
Organic Chemicals Department, Wilmington, Del.:

MEETING IN MADISON WITH MEMBERS OF THE FOUNDATION

I visited Madison on my recent trip to the West and discussed matters of mutual interest with the Wisconsin Foundation, particularly the subject of further clinical tests.

I met Dr. Scott first and in order to clarify his ideas we again went over the reasons for our believing that 7-dehydrocholesterol is the provitamin of commercial cholesterol. Dr. Scott brought up the matter of our request that Philips No. 1 material be included in some preliminary trials at Detroit. He mentioned that in presenting this matter for the consideration of the Foundation trustees they might wish to know the identity of Philips No. 1 material before authorizing expenditures on clinical investigation. He also foresaw the possibility of an investigator such as Dr. May wishing to know the identity of the material which he had tested before publishing any results obtained with it.

Later we saw Russell, Barney, and Ross of the Foundation and my impression is that this group would prefer to have the patent situation, as regards 7-dehydrocholesterol, further clarified before they would actively sponsor before the board of trustees any program of expenditures for clinical studies.

Digitized by Google

They inquired as to my opinion of the British patent 454,260 recently granted to I. G. on the preparation of 7-dehydrocholesterol. They told me that the British licensee, Glaxo, had opposed this patent in Britain until I. G. had acknowledged that Steenbock's irradiation process was basic to it.

The Foundation is very much interested in the coming vist of Professor Hörlein and our conference with him and the Winthrop people. They would like to sit in on the conference as soon as we think it is propitious for them to do so.

Later Dr. Scott and I discussed with Dr. Steenbock the matter of further clinical trials particularly on 7-dehydrocholesterol. Dr. Steenbock, while not committing himself directly, is apparently willing to accept 7-dehydrocholesterol as the physiological provitamin. However, his reaction to the situation was that the wishes and viewpoint of the pharmaceutical licensees should be considered before deciding whether the Foundation should spend any considerable sum of money in further clinical work. He mentioned that most of the pharmaceutical licensees had not been interested in obtaining rights to the manufacture of crystallin vitamin D (from ergosterol) and that the present situation might find them with the same attitude. He admitted, however, that if the patent situation and licensing arrangements worked out so that the five pharmaceutical companies were again in a position of having an exclusive hold of the synthetic vitamin D field that undoubtedly they would be very much interested.

ADDITIONAL NOTES

The Wander Co. (Ovaltine) are establishing a new biological department and have hired Dr. Haman as Director of this new work. Haman got his training in Steenbock's laboratory and has been in the Foundation laboratory for approximately the past year. Apparently arrangements have been made with the Foundation to put vitamin D in Ovaltine and I understand that the Wander Co. have been obtaining their vitamin D from Fleischmann.

I learned that American Research Products, Inc. (General Mills subsidiary which sells vitamin D) are selling a vitamin A concentrate prepared by Hickman's distillation process from fish oils. Hickman is with Eastman Kodak. I think the above development is the main reason for General Mills obtaining rights to the molecular distillation process a year or so ago.

BIOLOGICAL LABORATORY,
J. WADDELL, *Director.*

JW/MF

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., August 24, 1936.

ABBOTT LABORATORIES,
MEAD JOHNSON & Co.,
PARKE, DAVIS & Co.,
E. R. SQUIBB & SONS,
WINTHROP CHEMICAL Co.

GENTLEMEN: We have recently been approached by Dr. D. H. Shelling, of Johns Hopkins University (work to be done at the Jewish Hospital of Brooklyn), in the matter of supporting clinical investigations on viosterol emulsions. Preliminary evidence has indicated that viosterol in the emulsified form is more efficacious and better utilized than viosterol in oil.

The plan of the experiment is to follow the work through for a period of at least 1 year, making mineral balances, blood studies, and phosphatase studies, with the hopes that in the investigations as planned some facts may arise which will make it possible to understand better the mechanism which governs the action of vitamin D. It has also been planned to secure electrocardiograms before and after vitamin D therapy. A study such as this will also entail the usual number of serial X-rays, and the plan is to conduct the study on normal full-term and premature infants.

Naturally the question arises whether such a study would be of practical importance to all of our pharmaceutical licensees. We are hardly interested in the prosecution of problems of a purely scientific character that comes to us from outside institutions. Nevertheless, if this is a problem that has definite commercial possibilities, we should not make a hasty adverse decision.

Sincerely yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
H. L. RUSSELL, *Director.*

Digitized by Google

REPORT ON CONFERENCES WITH DEAN RUSSELL AND MR. WARD ROSS, OF THE FOUNDATION, IN CHICAGO, EARLY IN FEBRUARY 1935

Present: Dean Russell, Mr. Ross, Mr. Nielsen.
The following subjects were discussed:

1. The Sperti Patent.
2. Highly Concentrated Viosterol for the Treatment of Asthma and Hay Fever.
3. Foundation versus Breon case.

SPERTI PATENT

The Foundation wrote to Wm. S. Merrell & Company, Cincinnati, Ohio, on December 20, 1933, stating that the Sperti patent issued in 1928 is an infringement on Steenbock's patents. Merrell answered on January 8th, 1934, and referred the Foundation to the General Development Laboratories, Inc., 250 Park Avenue, New York (Mr. J. S. Prescott). On January 22nd the Foundation acknowledged Merrell's letter and wrote to the General Development Laboratories, Inc. No answer has been received. The General Development Laboratories, Inc. is a subsidiary of General Foods, Inc., New York.

Since General Foods and Merrell apparently consider it safe to proceed with manufacture by the Sperti process, Mr. Nielsen suggested that the Foundation requests its Washington representatives to inquire whether other patents have been granted to Sperti since 1928. Abbott Laboratories will also investigate.

It was also decided that Doctor Volwiler should approach Doctor Leech unofficially to discover whether Merrell has submitted the product and whether they have been permitted to use the name "Viosterol." If the Council has a sample package of the product, we may be permitted to see it and perhaps examine it.

Dean Russell asked us to attempt to procure packages of the Merrell product and submit one to the Foundation.

VIOSTEROL CONCENTRATE

Dean Russell asked for advice as to how to proceed in order to satisfy the demand from various hospitals and clinics for Viosterol Concentrate for clinical investigation. The Foundation is anxious that it should be made available because reports have been submitted indicating that it is highly beneficial in severe cases of asthma, hay fever, and arthritis. One licensee has suggested that it be put up in gelatin capsules. The product used by Doctor Reed of the University of Illinois is 100 times the potency of the commercial product.

Mr. Nielsen remarked that the price, in order to conform to that of Viosterol in Oil, would be very high—probably $3.00 per capsule, and that the daily dose suggested in certain cases would cost the patient $15.00 to $16.00.

Dean Russell said that the price would have to be materially lower, but that the treatment, even so, would be an expensive one. This, however, would not bar its use; many cases would be willing to pay $150 to $200 for relief or recovery.

Mr. Nielsen stated that if the capsules were priced considerably lower than the commercial product unit for unit, nothing would prevent the hospitals from opening the capsules and diluting the content with vegetable oil to obtain a "250 D" solution far below the regular cost.

Dean Russell asked for suggestions to prevent this. Mr. Nielsen stated that Abbott Laboratories would give further thought to this problem. Tentatively, he suggested that the concentrate might be denatured by the addition of a drug also indicated in these cases—Ephedrine, for example—that the product be considered as a drug, not a vitamin, and that it be distributed for clinical trial under a special name—all provided that the licensees agree. Any untoward effects from it thus would not reflect on the Viosterol products on the market.

FOUNDATION VERSUS BREON CASE

Dean Russell stated that the case will come up for trial on February 21st and 22nd. Mr. Hobbs will study the case upon his return from the East, and will keep us posted on developments.

CARL NIELSEN.

February 13, 1934.

Digitized by Google

MADISON, WIS., *February 27, 1933.*

ACETOL PRODUCTS, INC.,
260 W. Broadway, New York City.

DEAR SIR:

SNIDER CORPORATION ERGOSTEROL

In my conference with you and Dr. Waddell about January 13, I called your attention to the difficulty which we were then having with the Snider Packing Corporation regarding the inadequacy of the Vitamin D content of their treated tomato cocktail. Dr. Waddell has been furnished with the results which our Dr. Scott (head chemist of our Control Laboratory) has secured in his bioassays of samples of Snider's tomato cocktail, as well as the ergosterol solution which had been shipped to them by you.

In order that you may have all of our analytical data together, we enclose summary of same. Original examination of Snider's tomato pack made with both consignments of your irradiated ergosterol labeled 1349 and 1360 showed a deficiency in vitamin D content in the tomato product. Dr. Scott secured, at Albion, New York, a sample of Acetol's ergosterol 1349 in corn oil ethyl acetate solution. This was labeled as containing 29,586 rat units per cc. Scott's bioassay showed that there were about 9,860 rat units per cc.

Subsequently, Scott asked for another sample of your 1349 solution and on October 31, 1932, he received from your company a batch labeled No. 197 in corn oil which it was stated was used in the preparation of the ergosterol solution No. 1349. This concentrate (No. 197) labeled as containing 250,000 rat units per cc. was found up to the ascribed potency.

Later, on January 18, Dr. Scott received another small sample of batch No. 1349 in corn oil ethyl acetate solution from Dr. Waddell which was stated to be a composite of the earlier shipments which were sent to Snider. Biological assay of this new sample was made. This sample, however, was unmarked as to potency but in view of the fact that it carried the same No. 1349 as the first batch sent, we assumed that it contained 29,586 rat units per cc., but Dr. Scott found only about 9,860 rat units per cc. the same as the original sample received in September.

Examination of the Acetol No. 1360 ergosterol in corn oil ethyl acetate which was also used by the Snider Corporation in their pack in September (labeled to contain 29,586 rat units per cc.) was found to contain approximately 15,000 rat units.

Following the suggestion which was made at our New York conference in January it was then agreed that Scott and Waddell would exchange batches of the original solution for retest and in January Dr. Scott received from Dr. Waddell new samples of Nos. 1349 and 1360. The results of this last bioassay of No. 1360 confirm the earlier findings and show that this second sample also contained only 15,000 rat units per cc. the same as had been found earlier.

It would seem obvious that the ergosterol solution as sent to the Snider Corporation was, therefore, deficient in potency when compared with the label on the container.

CARNATION MILK CO. (OCONOMOWOC)

Owing to the interest of the Carnation Milk Co. of Oconomowoc in the possibility of incorporating vitamin D in their evaporated milk through the addition of irradiated ergosterol this office had suggested that they secure a sufficient quantity of irradiated ergosterol from your company in order that experiments might be made therewith. The Carnation Co. carried out a series of experiments with this ergosterol solution which was a concentrate in corn oil only and which was labeled to contain 250,000 rat units per cc. Samples of the treated Carnation milk, as well as some of the original irradiated ergosterol solution were submitted to this laboratory for bioassay. Dr. Scott found upon duplicate analyses of the ergosterol solution with ten rats on a given level, that it had a potency of 125,000 rat units per cc. Also the samples of evaporated milk were found to contain only one-half of the reputed potency which was based upon a careful dilution of the milk with a requisite quantity of ergosterol before being processed. These two incidents coming one on top of the other so closely have perturbed us very much, as it is obvious that the whole matter of the use of irradiated ergosterol in food products will be quickly brought into disrepute unless there can be positive assurance that the potency of the irradiated ergosterol purchased by our licensees will be fully up to labeled standard. In consequence, of our difficulties with the Snider Packing Corporation, they are so thoroughly discouraged with their efforts to use irradiated ergosterol that they are now seeking to abrogate their entire contract.

Digitized by Google

Our inability to unravel this matter satisfactorily from a technical point of view with your research laboratory makes us feel important to offer to the Snider people any solution of the present difficulty. Dr. Waddell had earlier suggested that the difficulty may possibly have occurred because of the mixture of the corn oil solution of ergosterol in an ethyl acetate solution. In this connection may we say that earlier Snider secured some ergosetrol from the Fleischmann people which was shipped in corn oil-ethyl acetate solution. This was found to be wholly up to standard as labeled.

Also bear in mind that the ergosterol shipped to the Carnation people was in corn oil only and this was found to be much below standard. It, therefore, seems to us that the ethyl acetate theory cannot be regarded as tenable.

The foregoing difficulties raise in our minds two suggestions which we now desire to lay before you.

SUGGESTIONS BY THE FOUNDATION

1. That in case of shipment by you to our respective licensees of any considerable quantity of ergosterol there be sent to our control laboratory a sample of sufficient size of said ergosterol ready for shipment to be used by us if advisable, in rechecking the potency before it is finally put into the commercial product. We recognize that the time element in the case of Snider was not sufficient to have this done at the outset, but we hope by taking the necessary precautionary measures in the future to prevent a recurrence of this very unfortunate incident.

2. We have gone over the license agreement between Acetol Products, Inc., and the Wisconsin Foundation and find, unfortunately, that there is no clause in the existing contract in which standard potency of the irradiated ergosterol sold by your company is guaranteed. We recognize that this omission perhaps relieves you from any legal responsibility so far as the foundation is concerned, but we believe that the importance of these two incidents which have occurred this year demonstrate the necessity and wisdom of insuring the foundation, as well as its licensees against a repetition of this situation.

It would be most unfortunate if any publicity was to occur as a result of the reduced potency of the Snider product for it would not only ruin the Snider business in this rpoduct, but would reflect most disastrously upon you, as well as ourselves. If the Government were to discover this situation and publish the results, it would do irreparable injury to the whole vitamin D situation in foods. We are, therefore, extremely anxious to approach the future in a way so that it will make impossible a repetition of this experience.

We recognize, in the matter of bioassay, the difficulty of exact duplication of analyses being secured when being made in different laboratories by different men, but we have used every possible means of checking the samples which have been in our possession to eliminate any variation incident to a single analysis, and in view of the fact of the very large number of analyses of a similar character that are conducted constantly, we believe that the results as reported by Dr. Scott must be taken as final so far as we are concerned.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
H. L. RUSSELL, *Director*.

MARCH 1, 1933.

Dr. H. T. SCOTT,
Chemist, Wisconsin Alumni Research Foundation,
Madison, Wis.

DEAR SCOTTY: Some days ago I received your letter of February 17 in which you report your findings on the samples of Snider shipments Nos. 1349 and 1350 which I sent you. The fact that your assays of these two samples do not agree with ours suggests that a difference in technique of the two laboratories may have some bearing on this matter. So far the batch concentrate No. 197 seems to be the only assay on which we agree. I wish, therefore, that you would write me, describing rather fully, the procedure which you have followed in diluting the various corn oil-ethyl acetate samples.

In reporting my findings on the samples of Nos. 1349 and 1360 which we had here I have described briefly the technique which we used. In each case there was made a first dilution in corn oil and a second dilution in ether. This is the practice which we always follow in this laboratory whever it is possible with materials of high potency. Ether dilutions are made with fresh distilled ether and only

Digitized by Google

on the day on which they are to be used. After making up rations the ether dilution is discarded and fresh ether dilutions made from the first oil dilution as they are required for later tests.

I may say that some preliminary tests which we have made on the sample of No. 1360, taken from the supply in Snider's possession and which we received from you a short time ago, indicate that this sample will show a considerably higher potency than you have found in your tests. I am unable to speak definitely about this sample, however, until further tests have been completed.

With kind regards, I am,

Yours sincerely,

J. WADDELL,
Director, Biological Laboratory,
Acetol Products, Inc.

MARCH 2, 1933.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis.

(Attention of Dean H. L. Russell)

GENTLEMEN: We acknowledge at once your letter of the 27th and you can expect to hear from us on the various subjects mentioned in this letter as soon as we have had an opportunity of doing some investigating and discussing these matters in our own organization.

Cordially yours,

ACETOL PRODUCTS, INC.,
_____,
Sales Manager.

WINTHROP CHEMICAL CO.,
February 8, 1939.

Winthrop Chemical Co. requests consideration of massive V. D. dosage and parathyroidprivic tetany.

Conference with Drs. Steenbock and Scott relative to H. G. Bertram's request for consideration. Steenbock is of the opinion that in view of the fact that vitamin D is no longer a distinctive Steenbock product but can be secured from a variety of sources that the foundation might as well favor the commercialization of high dosages unless there is very serious objection on the part of the A. M. A. officials toward a move of this sort.

It was deemed inadvisable to approach Dr. Leech of the Council on Pharmacy and Chemistry, directly and ask for the A. M. A.'s judgment in regard to this matter. It was thought preferable that some prominent who is close to the council such as Dr. Barr, of Washington University, might be the point of first contact and it was agreed that Dr. Scott would contact Barr within the next 2 or 3 weeks.

Russell wrote Bertram, of Winthrop, that the matter was under advisement and was now in the process of contacting the A. M. A. officials and that the foundation would give Bertram the results of these contacts as soon as was practicable.

Russell further spoke of the fact that W. S. Merrell & Co., of Cincinnati, are now selling a massive dose preparation and that in connection with the adjustment of the General Foods amended contract it was highly desirable to get this Merrell situation composed at as early a date as possible.

Suggestion was made that although Merrell's sales of high potency vitamin D were quite small still this matter entered into consideration of the situation in connection with the settlement of the General Foods supplementary contract.

Scott was supplied with copy of Winthrop's compilation of data made in July 1938 relative to the somewhat equivocal results obtained in the use of high potency vitamin D in cases of arthritis and psoriasis.

H. L. RUSSELL.

Digitized by Google

ACETOL PRODUCTS, INC.

INTEROFFICE CORRESPONDENCE

Attention of: Mr. G. Bradshaw.
Subject: Wisconsin Alumni Research Foundation.
To: Wilmington office.
From: New York office.
Date: March 2, 1933.

Enclosed is a copy of the foundation's letter of February 27 and our acknowledgment of same.

I have discussed this matter briefly with Dr. Waddell by phone and have sent him a copy of the foundation's letter.

Dr. Waddell's letter of March 1, together with his various letters to Dr. Scott and the Snider Packing Corporation's letter of February 24, will give you a pretty complete picture.

I am of the opinion that the foundation is trying to evade any responsibility or expense in these matters and while I realize that Dr. Waddell is not infallible I am inclined to think that his assays would be more nearly right than anybody else's and that the potencies claimed by us are correct within certain tolerances.

Please let me know what you wish done further in this matter.

S. A. ATKINS.

JANUARY 25, 1937.

A conference was held in New York City on January 22nd to discuss the Vitamin D situation with representatives of the I. G. It was attended by Prof. Horlein, Dr. Duisberg, Dr. Weiss, Mr. Bertram, Dr. Hiemens, Dr. Stockman, Mr. Protto, Mr. King, Dr. Waddell, and the writer. At a preliminary conference held on January 14th it had been indicated by the I. G. representatives that they were very anxious to set up some type of working arrangement with duPont in the Vitamin D field. This conference was largely devoted to a discussion of the scientific developments incident to the discovery of the various Vitamin D products which are now known. Dr. Horlein was particularly interested in discussing Dr. Waddell's developments; our relationships with the Wisconsin Alumni Foundation; the importance of the Milas electrodeless discharge method for converting provitamin to Vitamin D and our relationships with the Philips Company of Holland. It seemed evident from the conversation that the Germans believed it possible that the Waddell patent covering the action of oxidizing agents on cholesterol might have a bearing on the Windaus method for making 7-dehydro cholesterol, and they asked for the reaction product resulting from the use of Dr. Waddell's patented conditions. We said we would take this under advisement but were not in a position to make a decision. They also asked us definitely what the cost was for Philips Vitamin No. 1. We told them we were not in a position to answer this question.

With this previous conference as a background, the conference on January 22nd was for the purpose of making definite suggestions for cooperation in the Vitamin D field. Mr. Weiss, as before, led the meeting and stated at the outset that they were very anxious to set up a working arrangement with duPont because the Bayer Semesan matter had worked out quite satisfactorily and they would like to set up something similar in the pharmaceutical field. His definite proposition was that duPont give the Winthrop Chemical Company the first right to exploit all duPont pharmaceutical developments on an exclusive basis. In return, Winthrop would give duPont an exclusive free license for Vitamin D in the poultry field. Profits on duPont pharmaceutical developments would be split 50–50.

Mr. Protto advised Mr. Weiss that the duPont Company had some prior commitments in the pharmaceutical field with Abbott Laboratories and the Eli Lilly Company and it would be necessary to carefully consider our arrangements with these companies to determine whether or not we were free to deal with Winthrop in this field. It was pointed out that interests in the duPont Company other than in the Organic Chemicals Department would have to be considered before a definite answer could be given.

Digitized by Google

A general discussion ensued in which Mr. Protto outlined at some length the du Pont position in the Vitamin D field. The du Pont rights under the Wisconsin Alumni Foundation were given in detail and the Waddell developments, as well as the Milas patent application were cited to show that we have an important technical position in the field. From the commercial standpoint, it was brought out that we are able to exploit the Philips products No. 1 and No. 2 which we believe to be attractive commercially. Dr. Hörlein said that they had turned down the Philips No. 1 product and that they had not had an opportunity to consider the No. 2. Mr. Protto continued and pointed out that the method would probably be used which proved to be most economic. He felt that it would be preferable to deal with the Wisconsin Alumni Foundation since they could be of considerable value to the industry in policing and regulating matters. If, for any reason, such arrangements became unsatisfactory, it would then be possible to consider alternative procedures not involving the use of the Foundation patents, that is, we might commercialize the Milas process. Dr. Horlein intimated that they might not have to operate under the Foundation patents since the irradiation of a synthetic pure provitamin (7-dehydro cholesterol) might not be considered to be dominated as is the irradiation of naturally occurring sterols.

Dr. Stockman discussed the Wisconsin Alumni Foundation at considerable length and evidently feels that the Foundation developments have been based largely on the Windhaus work on Vitamin D, which was thrown into the pool. He felt that they should not be restricted to the pharmaceutical field on Vitamin D_2 (calciferol) and he also felt that the Foundation should not have given exclusive rights to du Pont with few exceptions in other fields and because of the I. G. development work on Vitamin D_3 (from 7-dehydro cholesterol), they should not be forced to operate within the narrow pharmaceutical field under their Foundation license.

At the first conference the writer asked concerning the stage of development of the Vitamin D_3 and was informed that it was only a laboratory process. At this conference, because they were making a definite offer, he again asked this question and very surprisingly was informed that the Windhaus process had been commercialized and that they were in a position immediately to offer the material in commercial quantities. Dr. Hörlein also stated that it could easily compete in price with cod liver oil which gives Vitamin D at $1.00 per standard unit. The writer then expressed the thought that, if we worked out some cooperative commercial development, the I. G. would be willing to supply us with technical information to assist in starting the manufacture in this country. He was informed by Mr. Weiss that Winthrop wished to do the manufacturing and that they would supply du Pont with their requirements in the poultry field. Mr. Protto stated that the du Pont Company was primarily interested in manufacturing and that we would expect to manufacture our requirements and hoped to be able to supply the American requirements of the Winthrop Chemical Company. It was obvious that there was a complete divergence of opinion on this point and nothing further was said except that if we manufactured we would hope to set up some arrangement whereby we would pay Winthrop a certain royalty on the net selling price and that this royalty might vary in amount depending on the price charged in the various fields.

Mr. Protto suggested the advisability of working out a three party arrangement including the Winthrop Chemical Company (I. G.), the Philips Company and the duPont Company. If this were worked out, all of the important developments in Vitamin D could then be correlated and the information of all three parties utilized and their interests taken care of on a basis consistent with their positions. This did not seem to appeal greatly to the Germans inasmuch as they had already turned down the Philips product No. 1 and since Dr. Hörlein stated that the I. G. controlled irradiation in Germany. If the German D_3 is the cheapest to manufacture, Philips would, of course, gain nothing from a three party arrangement unless they were permitted to manufacture this product in Holland and sell it in their trade outlets. This would probably conflict with German sales and it seems rather doubtful that a satisfactory three party arrangement could be effected.

Inasmuch as the Vitamin D arrangement seemed to be dependent on the broad pharmaceutical arrangements between duPont and Winthrop, I asked if they had any alternate proposal to make if we found that our prior commitments made it impossible for us to give them rights to our pharmaceutical developments. Mr. Weiss stated that such rights were quite important to them and if such were the case his proposals on the Vitamin D would, of course, be withdrawn and entirely new proposals, if any, would have to be made.

Digitized by Google

Apparently all of the points outlined above had been thoroughly discussed and no others were considered important so the conference was concluded with the statement that we would carefully consider their proposals and advise them in the near future concerning our position in this matter.

H. W. ELLEY,
Associate Chemical Director.

JULY 8, 1935.

Mr. L. D. BARNEY,
Wisconsin Alumni Research Foundation,
Madison, Wis.

DEAR MR. BARNEY: At the first opportunity the writer wishes to confirm the essential points discussed in our lengthy conference in New York.

The matter or the addition of vitamin D to fluid milk, we understand, will be temporarily laid aside until the foundation has had a chance to test one or two of the State laws by the method outlined by Mr. Rose. As the writer stated, it would be our preference that the foundation not take legal action against anyone, but since this action has been decided upon by the trustees, we will withhold further discussion of the subject until the whole situation is clarified.

We have discussed the advisability of our company promoting vitamin D bread throughout the country. This sort of a business is something for which we are not anxious, but, on the other hand, it might be best for everybody concerned if we tackled the job. We are making a careful study of this and would like to submit a definite plan for your consideration. If you have any fundamental ideas which must be a part of any plan we should like to have these now. This matter is having our immediate attention, consequently, we should like to have any instructions or suggestions at your earliest convenience.

We are pleased to know that you are favorably disposed to a reconsideration of our royalty payments. As the writer explained, we have spent a substantial sum of money in the development or irradiated cholesterol. As you know, Dr. Waddell's paper on this subject was published and we believe the findings thus disclosed will be beneficial to all licensees of the Foundation. In turn, we believe this will directly benefit the foundation. We are supporting further work on cholesterol in the poultry field ourselves, and all of the irradiated cholesterol for the clinical work is being supplied free of charge by us. We are also assaying the irradiated cholesterol and cod liver oil. If results verify Dr. Risdall's preliminary findings, our sales of irradiated cholesterol in the pharmaceutical field alone will be substantial. The three pharmaceutical Licensees intend to supplant irradiated ergosterol with irradiated cholesterol and you have figures showing the total sales over a period of years. In addition, we expect a substantially larger volume from the poultry field where irradiated cholesterol will be used as a vitamin D supplement in place of fish liver oils or fish liver oil concentrates. In view of all the facts and conditions, we believe that our royalty payment should be 5 percent of the total sales of either irradiated ergosterol or irradiated cholesterol, or both. As suggested, we believe this change should be made as of January 1, 1935. The only business on which we might base a minimum payment, which you suggested, is the R. B. Davis Co. business which amounts to approximately $5,000 a year. It is probable that this will be our only income from vitamin D for at least 6 months to a year. If, for reasons not apparent to us at the present time, it would be desirable to have a minimum payment based on 5 percent of this business, we have no serious objection, although we would much prefer to eliminate a minimum payment altogether.

The writer feels certain that you understand our desire and willingness to be considered as a part of the foundation. You know our desire to prevent the vitamin D field from falling into disrepute because of too many producers of various types of so-called vitamin D. We would much prefer centralized control in the hands of the foundation and you may count on us to support you even though, at times, we may have differences of opinion.

We hope the trustees will arrange to act favorably upon this request at an early date.

As we understand it, you have a definite need right now for a source of supply of irradiated ergosterol for the Canadian bakers and Spaulding. The writer briefly outlined at the conference what he thought our policy in this matter would

Digitized by Google

be. Believing, as we do, that the trustees will not favorably upon a change in our royalty payments and will consider us a part of the foundation insofar as it is practical to do so, we would be inclined to abide by your wishes in the matter of price. We regard $1.50 per 1,000,000 Steenbock rat units as being a fair price for irradiated ergosterol. We should like to record here our definite feelings against high royalty charges such as we understand existed in General Baking Co.'s original arrangement with National Foods. In addition, it is only natural that we would not care to commit ourselves to produce this exceedingly small amount of material over a long period. We have some definite ideas regarding total charges for royalty and control work, and we propose to submit these to you in the plan suggested in paragraph 3. These ideas are summed up best by the statement that we consider the original arrangement between National Foods and General Baking Co. as being detrimental to a widespread use of vitamin D in foodstuffs. Our plan will offer for your consideration, charges, exclusive of the cost of vitamin D, that we consider to be fairer.

I believe the foregoing briefly confirms all of the principal points of our discussion that need immediate attention.

With kindest personal regards.

Cordially yours,

E. I. DU PONT DE NEMOURS & CO., INC.

E. I. DU PONT DE NEMOURS & CO., INC.,
Wilmington, Del.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill.

(Attention Ward Ross, Esq.)

DEAR MR. ROSS: This is to acknowledge receipt of your letter of February 12, 1935, informing us of two declaratory judgment suits which have been brought in the United States District Court for the Northern District of Illinois, in order to determine the extent of the patent monopoly under the Steenbock patents. In this letter you call our attention to paragraph 13 of the Acetol-Foundation agreement, and state that in the event these declaratory judgment suits are tried on the merits we would be called upon to share in the expenses incurred by you as defendant. While we are only too glad to cooperate to the fullest extent in assisting you to protect the licensed field we do not believe that under our agreement this cooperation entails upon us the obligation to bear a portion of the financial expense of these suits.

Article 13 of the agreement states that when protection of the licensed field requires you to sue infringers therein we shall bear a portion of the expenses of such suit. The declaratory judgment suits in question are, however, entirely outside the scope of article 13. They are not suits by you to enjoin acts of infringement within the licensed field. On the contrary, they are suits by a third party to determine just what constitutes an act of infringement in order that acts carried out by such third party will not violate the patented field. It was clearly not the intention of the contracting parties in entering into this agreement, or as set forth in the agreement, to bear the expenses of any suits other than those brought by the foundation as plaintiff to prevent acts of infringement within the licensed field. Since these declaratory judgment suits are entirely outside of such category we must reluctantly disagree with your contention and refuse to assume any obligation for expenses incurred by you in defending suits of this type.

With the exception of financial assistance we shall be delighted to aid you so far as reasonably possible in defending these suits. We would appreciate information concerning the conduct and the outcome of these suits. Moreover, if we can be of any assistance therein please do not hesitate to call upon us. In the event that my work permits me, I should be only too glad to assist you in the preparation and defense of these suits.

Very truly yours,

ARTHUR G. CONNOLLY,
Counsel for Acetol Products, Inc.

Digitized by Google

E. I. DU PONT DE NEMOURS & CO., INC.,
Wilmington, Del., February 20, 1935.

Re: Acetol-Wisconsin Alumni Research Foundation Agreements.

J. E. KUPPERIAN.

The foundation, in its letter of February 12, 1935, stated that two suits for declaratory judgments have been instituted in the United States District Court for the Northern District of Illinois. These suits are for the purpose of determining the scope and validity of the Steenbock patents, under which Acetol is licensed. In accordance with article 13 of the Acetol-foundation agreement, Acetol is obligated to share the expense of any infringement suits brought by the foundation upon the licensed patents. The aforementioned letter states that Acetol will be called upon to share the expense of the two suits referred to in the event that they are tried upon the merit.

It is my opinion that a fair interpretation of the agreement in question imposes upon Acetol the obligation to share the expenses of the declaratory judgment suits. It is true that article 13 of the agreement specifies patent infringement suits, and that declaratory judgment suits are not strictly patent infringement suits. The agreement is clearly to the effect that Acetol as a licensee will financially assist in protecting the entire licensed field. Patent infringement suits were specifically referred to because at the time of the agreement they were practically the only type of suit wherein the scope and validity of a patented field could be judicially tried. Declaratory judgment suits are of recent origin and were practically nonexistent at the time the original agreement was entered into. However, they affect the patented field in the same manner as an infringement suit, and to protect such field must be defended just as vigorously as an infringement suit must be prosecuted. In view of the aforementioned facts it is my opinion that a court in construing article 13 of our agreement would hold that our obligation was substantially to share the expense of protecting the field embraced by the claims of the licensed patents regardless of whether this field was jeopardized by the acts of an infringer or by a potential infringer bringing a suit for a declaratory judgment. The court would state that the reference therein to patent infringement suits was not mutually exclusive but was merely to point out one of several procedures whereby the foundation might be required to protect the licensed inventions, and wherein Acetol as a licensee must bear a share of the expenses of such protection.

Despite the fact that the preceding paragraph sets out my opinion in this matter, I would most certainly refuse to acquiesce in the demands of the foundation for the following reasons:

(1) The foundation has been merciless in beating out competition throughout the United States wherever such competition threatened to encroach upon the synthetic vitamin D field. As a result, there are numerous companies which will endeavor to silence the foundation by bringing declaratory judgment suits. If we assume the burden of sharing the expenses of the suits now filed it would establish a precedent which might be extremely costly to Acetol.

(2) If the plaintiffs in any of these declaratory judgment suits are successful in restricting or invalidating the Steenbock patents Acetol will benefit thereby since article 13 of the agreement specifies that Acetol need not pay royalties thereunder if the licensed monopoly is substantially injured by a judicial decree. Insofar as the decree places a restricted scope thereon, the field outside the domination of the foundation is thereby increased which should also benefit Acetol.

(3) Acetol has a good legal argument upon which to base a refusal to bear the expenses of declaratory judgment suits defended by the foundation, even though it is my personal opinion that this argument would not be sufficient to sway the decision of a court called upon to interpret the pertinent section of the agreement. This argument is to the effect that under our agreement with the foundation we are called upon merely to share in the expense of a patent infringement suit brought by the foundation to enjoin acts of infringement within the licensed field. A declaratory judgment suit is first of all not a patent infringement suit brought by the foundation, and secondly is not to enjoin acts of infringement, but on the contrary is to determine in advance just what constitutes an act of infringement.

I am attaching herewith a letter to the foundation embodying what I consider should be our position in this matter. This letter will not be forwarded until you have signified your approval thereto. Will you kindly inform me of your feeling in this matter as promptly as possible.

ARTHUR G. CONNOLLY

Digitized by Google

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., September 28, 1940.

MR. GERALD HERRICK,
Department of Justice,
Anti-Trust Division,
Chicago, Ill.

DEAR SIR: Pursuant to your request, I am enclosing a tabulation of royalties received by the foundation on cod liver oil with viosterol, viosterol and drisdol for the period 1931 through the first half of 1940, inclusive. These figures have been taken from our records and are correct.

I want to call to your attention that sales of these three products in foreign countries except Canada (which are reported separately by our licensees), are included in the foregoing figures since our royalty reports from these licensees do not separate foreign and United States business. The volume of sales of the three products herein mentioned in foreign countries is, however, relatively small in comparison with the business done in the United States on these products.

In the pharmaceutical field, the three Steenbock licensed products above referred to are the only ones for which the foundation has ever established minimum prices. With reference to the food field, it has not been our general practicé to control minimum prices of our licensees. There are, however, certain minor exceptions to this policy. These are the following:

1. In the DuPont license there is a minimum price provision in connection with the sale of vitamin D in the bread field. For your information, the foundation's royalties from the sale of vitamin D bread in the United States are approximately $1,200 per year. Further, some months ago, the parties (DuPont and the foundation) agreed to delete this clause from the license agreement although documents to accomplish this have not yet been formally executed.

2. In our license agreement with S. S. Kovacs, the foundation has established the minimum selling price of the licensee's vitamin D concentrate for use in fluid milk. This is a small operation on which our royalties probably will not exceed $2,200 a year.

3. In our license agreement with Standard Brands, the licensee has an option to sell a vitamin D concentrate for use in fluid milk. If the option is exercised, the foundation has the right to establish minimum selling prices for the product. The option has never been exercised by the licensee, no royalties have ever been received by the foundation on this product since no sales have been made, and the foundation has never exercised the right to establish such minimum selling prices.

The foregoing relates to the establishment by the foundation minimum prices of Steenbock licensed products in the food and pharmaceutical fields. As I have told you there have been instances where the foundation has either established maximum prices for licensed products or has incorporated provisions in license agreements under the Steenbock patents prohibiting the licensee from increasing the price of its product by reason of the fortification of the product with vitamin D under its license.

I am also enclosing three charts as follows:

a. Royalties from United States pharmaceutical licensees 1930–39.
b. Steenbock patent income 1930–38.
c. Royalties from United States pharmaceuticals expressed in block graphs.

These graphs are made up from royalty figures taken from the books of the foundation and are correct.

The foundation's gross royalty income from the Steenbock patents in 1939 was $936,610.70. This figure has been taken from our books and is correct.

I shall be glad to furnish you any additional information on these matters if you desire it.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
———— ————, *Business Manager.*

Digitized by Google

Summary of royalties received by Wisconsin Alumni Research Foundation on cod liver oil with viosterol, viosterol-drisdol—1931 through first half of 1940, inclusive (accrual basis), September 28, 1940

	C. L. O.	Viosterol	Drisdol	Total
1931				
Abbott	$251.66	$2,433.59		
Mead Johnson	7,700.69	74,786.68		
Parke, Davis	1,635.55	20,730.63		
Squibb	19,953.56	49,272.74		
Winthrop	750.92	2,022.44		
Total	30,292.38	149,246.08		$179,538.46
1932				
Abbott	125.61	1,507.13		
Mead Johnson	12,067.98	58,480.22		
Parke, Davis	1,201.93	13,866.20		
Squibb	19,007.96	39,499.60		
Winthrop	759.38	1,852.70		
Total	33,162.86	115,205.85		148,368.71
1933				
Abbott	155.12	2,306.47		
Mead Johnson	13,023.46	41,616.51		
Parke, Davis	1,246.05	14,662.92		
Squibb	17,212.38	27,710.31		
Winthrop	709.47	988.84		
Total	32,346.48	87,285.05		119,631.53
1934				
Abbott	189.66	3,543.66		
Mead Johnson	13,605.61	31,399.01		
Parke, Davis	935.36	13,551.73		
Squibb	12,963.24	18,667.44		
Winthrop	420.70	518.40		
Total	28,114.57	67,680.24		95,794.81
1935				
Abbott	128.05	3,954.69		
Mead Johnson	14,229.75	26,267.15		
Parke, Davis	819.25	12,619.81		
Squibb	11,865.55	16,062.69		
Winthrop	5.83	219.96	$1,915.78	
Total	27,048.43	59,124.30	1,915.78	88,088.51
1936				
Abbott	137.29	4,117.03		
Mead Johnson	11,764.03	20,376.21		
Parke, Davis	440.03	9,066.68		
Squibb	9,612.34	14,619.69		
Winthrop		229.71	15,052.30	
Total	21,953.69	48,409.32	15,052.30	85,415.31
1937				
Abbott	38.52	2,380.11		
Mead Johnson	4,983.65	9,446.80		
Parke, Davis	173.53	5,382.79		
Squibb	3,419.51	6,489.17		
Winthrop		109.87	17,837.60	
Total	8,615.21	23,808.74	17,837.60	50,261.55
1938				
Abbott	20.65	1,546.69		
Mead Johnson	3,789.05	7,834.52		
Parke, Davis	121.77	4,506.66		
Squibb	3,036.73	5,806.00		
Winthrop		149.86	20,790.05	
Total	6,968.20	19,843.73	20,790.05	47,601.98

Digitized by Google

Summary of royalties received by Wisconsin Alumni Research Foundation on cod liver oil with viosterol, viosterol-drisdol—1931 through first half of 1940, inclusive (accrual basis), September 28, 1940—Continued

	C. L. O.	Viosterol	Drisdol	Total
1939				
Abbott	$16.98	$1,494.73	----------	
Mead Johnson	2,950.25	6,685.65	----------	
Parke, Davis	108.54	3,720.02	----------	
Squibb	2,417.28	4,567.60	----------	
Winthrop	----------	221.97	$22,963.43	
Total	5,493.05	16,689.97	22,963.43	$45,146.45
1940				
Abbott	5.86	249.88	----------	
Mead Johnson	1,120.77	2,495.63	----------	
Parke, Davis	45.97	977.62	----------	
Squibb	700.26	1,628.35	----------	
Winthrop	3.80	27.00	9,258.05	
Total	1,876.66	5,378.48	9,258.05	16,513.19

NOTE.—As of January 1, 1937, royalties were reduced from 10% and 5% to 6% and 3% of net sales of Cod Liver Oil with Viosterol and Viosterol respectively. Winthrop's royalties have remained unchanged at 10% and 5% throughout the period included in this report. It is expected that Winthrop's royalties will be reduced effective as of January 1, 1940, to 6% on Drisdol and Viosterol and 3% on Cod Liver Oil with Viosterol. This reduction is not reflected in the foregoing figures.

REPORT OF THE TRUSTEES OF THE WISCONSIN ALUMNI RESEARCH FOUNDATION TO THE BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN, JUNE 22, 1931

As the Wisconsin Alumni Research Foundation has for its avowed object, aid in supporting scientific research in the University of Wisconsin, it is fitting that a report of its activities be made to the governing board of the institution. This is all the more desirable since there have been so many changes recently in the personnel of the Regents that the aims, purposes and accomplishments of the Foundation are probably not well understood by all of the present governing board.

HISTORICAL DATA

The plan under which the Foundation was organized was presented to the April meeting of the Board of Regents in 1925, and upon approval by the Board, a corporation known as the Wisconsin Alumni Research Foundation was incorporated November 14 of that year. To quote from the charter of organization, its purpose is:

"To promote, encourage and aid scientific investigations and research at the University and to assist in providing the means and machinery by which the scientific discoveries and inventions of the staff may be developed and patented and the public and commercial uses thereof determined; and by which such utilization may be made of such discoveries and inventions and patent rights as may tend to stimulate and promote and provide funds for further scientific investigation and research within said University."

The origin of the corporation grew out of the discoveries of Professor Harry Steenbock on the development of antirachitic properties (vitamin D) in pharmaceutical and food products when subjected to irradiation by ultraviolet light. It was at once obvious that a discovery of this character could be so misused as to defeat, in large measure, the beneficial values of the invention, without the protection of a patent. This was especially true in relation to the dairy industry which is of such special significance to the welfare of this state. Therefore, Dr. Steenbock felt that it was highly desirable for him to protect the use of the process by taking out a patent.

Realizing its commercial possibilities, and desirous of seeing the avails of its development utilized in the furtherance of scientific investigation, Dr. Steenbock very generously offered to turn over his patent entirely to the University if some practicable method of handling the same in an effective manner could be worked out.

Digitized by Google

INSTITUTIONAL TREATMENT OF PATENT PROBLEMS

Universities, through their very organization, are poorly equipped to handle problems of this kind. Steenbock's previous experience with his own University had illustrated this fact, for when his work on vitamin A had been offered to the University authorities for them to secure a patent on what was almost as important as vitamin D, the cumbersome machinery of University administration failed to function rapidly enough so as to protect this discovery. Different institutions have tried a variety of schemes to meet this recognized need.

In some institutions the patents have been assigned to the Regents, but governing bodies of this sort are scarcely ever organized to handle effectively matters requiring so much detailed attention. Other institutions have tried the organization of a Research Committee of the staff to undertake commercialization. Sometimes a combined membership of both staff and regents has been tried. In a few cases, institutions have frankly joined hands with some specific commercial concern, giving it full authority to push the commercial development while the financial returns were divided in some manner. Obviously, with the amount of business detail involved, it would seem preferable to have a direct connection with commercial organizations, for it must always be recognized that there is a big gap (and often a most expensive one), between the pencil sketch stage of the first idea regarding a discovery, and the perfected commercialization of the completed process.

If the Steenbock patent had been the only one to handle, doubtless, it might have been possible to have disposed of this independently to such business groups as would have represented the pharmaceutical and food interests. With the possibility, however, that there were other latent opportunities in discoveries to be made by other staff members who might desire to have the University become a beneficiary in a similar way, the idea was worked out that a non-profit-sharing corporation could be organized that would take the several patentable ideas and commercialize their development through a system of licenses. If this can be sucessfully done, it will have the double advantage of securing not only patent protection with such avails as may flow from commercial development, but the monies so received will be dedicated to the public service through the fact that the income is to be used for the support of research which is in general for the benefit of the public.

The Wisconsin Research Foundation, therefore, is an unique experiment in social development in that the results of research in a publicly supported institution are used for the public benefit through corporate channels. As the Foundation is blazing a new trail in this social and economic field, its course is being watched with considerable interest by sister educational institutions. Conferences and correspondence has already been had with a number of other universities who see in this Wisconsin idea, a new mode of approach to a problem which has baffled successful utilization. Already some of our sister universities have adopted the Research Foundation idea in toto.

ORGANIZATION OF FOUNDATION

A group of interested alumni subscribed the necessary funds to start the corporation. The management of the corporation is vested in six trustees, all of whom are alumni. The personnel of the Trustees is as follows:

Geo. I. Haight, Chicago.
W. S. Kies, New York.
Judge Evan A. Evans, Chicago.
L. M. Hanks, Madison.
T. E. Brittingham, Jr., Madison.
Timothy Brown, Madison.

Mr. Haight has been President of the Trustees since organization; Mr. Brittingham, Vice-President; and Mr. Hanks, Secretary and Treasurer. An Executive Committee consisting of the officers of the Association is empowered to transact interim business. On July 1, 1930, H. L. Russell was elected Director of the Foundation in which capacity he assumed the executive management of the work of the Foundation.

The Trustees of the Foundation meet bi-monthly in Chicago, while the Executive Committee also has bimonthly meetings in Madison, alternating with the sessions of the full Board. No compensation has been paid any of the Trustees for attendance on meetings.

Digitized by Google

FINANCIAL POLICY OF TRUSTEES

Most educational foundations when they are launched start with an endowment, often running into millions of dollars, and a fairly well defined objective for which funds have been furnished. After they organize an administrative staff, they are in position to inaugurate their policies of support from the beginning.

The Wisconsin Alumni Research Foundation had no such start. All it had, at the outset, was the willingness of an individual to turn over to a body of individuals interested in the scientific welfare of the University an idea that was subject to patent in order to protect it from misuse. After the organization of the Foundation, it was necessary to put this only asset which the corporation had to work. Initial contracts were made on the best terms that could be secured under the circumstances. Business concerns recognized that Dr. Steenbock's discovery would require the investment of indefinite sums to make possible the commercial utilization of the process. Royalties which might have been possible if a completed commercial project had been sold had to be gauged in the light of existing conditions. The Foundation had no money to invest in experimental development. The Regents of the University were not in position to allocate necessary funds from public taxation to purposes of this character.

Under these conditions, naturally, the only policy which the Foundation could follow was to secure what available contracts that were possible. Ordinarily, it might be expected that starting from notheig some years would elapse before the Foundation would be in a financial position to do much of anything in the way of financial aid to University research. The Trustees early adopted the two following policies:

1. To build an endowment principal of substantial amount, the annual income of which might be used to advance research in the University.
2. To accumulate a reserve that is necessary to protect the inventions at stake.

Competition now-a-days is so keen in the business world, and the constant advance of science is so rapidly rendering existing methods obsolete, that it would be the height of folly for the Foundation not to accumulate such reserves to protect its basic operations. Litigation of any successful enterprise is bound to ensue sooner or later. Commercial concerns are disinclined to join hands with any organization whose main asset is an altruistic attitude toward the public welfare, but which does not have the financial resources to pay its share in maintaining its legal rights.

A definite objective of the Trustees is, therefore, to accumulate a substantial sum; invest this in sound securities. The income from such a fund can be used even now for the furtherance of University research. This has been done already during the two years for which the Foundation has been receiving royalties. The financial success of the Foundation has already been far beyond the hopes of its organizers. The Steenbock patent is yielding very substantial sums on the basis of its royalties. The value of the discovery is being steadily recognized as more and more scientific work is done on it by other than our own scientists. While rival methods have been proposed and even patents granted thereon, the commercial applicability of the Steenbock process has far outdistanced those that in any sense can be regarded as at all competitive methods.

Numerous infringers have been warned, suits instituted, and in most cases adjustments made in which licenses under the Steenbock patent have been taken to avoid further legal complications.

If the Foundation had no other duty to undertake than the adequate development of the Steenbock process, it would have its hands full. Very soon, its organization must be expanded to work its other patents.

The accumulation from royalties so far have been almost wholly from the ultraviolet patents. During the calendar year 1930, the gross income was $354,590, or very nearly $1,000 a day throughout the year. This income has been developed within less than three years. It is hardly probable that the phenomonal growth of the past will be continued throughout the life of the patent, but, frankly, we do not have sufficient data on which to hazard an opinion.

The Foundation Trustees are very firm in their attitude that the Steenbock process shall be very carefully controlled, and it is not at all likely that there will be any large number of additional licenses granted under the patent.

Digitized by Google

INVESTMENT POLICY OF THE FOUNDATION

From the outset, the income of the Foundation has been invested in high grade bonds. With the comparatively rapid growth of this amount for investment, it is obvious that great care should be given to the formulation of a safe investment policy. The Treasurer has corresponded with a large number of the Universities that have invested funds and also educational foundations to ascertain existing policies of those institutions. Data secured from nineteen institutions reveal the fact that there is apparently no settled policy that is generally recognized. Apparently, most institutions have simply developed their own plan without much reference to the formulation of any specific rules. Perhaps this may be the end result after their years of experience, but it would seem proper to work out some general criteria that could be followed with safety. One policy is evident from the reports of these nineteen institutions: By far the majority of those reporting follow the plan of making investments of considerable proportion in stocks (including both common and preferred) as well as bonds.

The Wisconsin Foundation has not adopted as yet any final code of procedure to follow. It would like to acquire somewhat more experience before taking final action on so important a matter. But for the immediate present, it has adopted the following principles to guide it in its investment procedure:

1. Diversity as to geographic distribution and type of security.
2. Specific limit of amount invested in any bond or stock $10,000 of par value except that investments made in investment trusts limited to one class of stock only might exceed such limit.
3. Wisconsin investments should be carefully considered and favored, other factors being equal.
4. No investments to be made in any securities of any companies in which any trust is personally interested.
5. No investments to be made where financial rating (if rated) is below Moody Baa.
6. Investments in stocks (including investment trust)) shall not exceed 10% of Foundation's holdings.
7. A duly constituted committee of the Board shall have the responsibility of making the investments, such selections, however, to be brought to the knowledge of entire Board at next regular meeting.
8. It shall be the policy of the Foundation to submit its investment portfolio to competent financial counsel for advice at least every six months.

BOND INVESTMENT ACCOUNT

On June first of this year, the invested capital of the Foundation was $406,594. All of the funds as acquired (after operating expenses and allotments for research have been deducted) have so far been invested in high-grade bonds. 34% of these are rated by Moody as Aaa; 23% Aa; 32% as A; 3% as Baa. Of the remaining 10% that have no Moody rating 3.7% are local issues and slightly over 6% are bonds if investment corporations. Over 60% of entire bond list mature within 10 to 20 years.

Computed on the basis of income the entire bond portfolio averages on basis of cost 4.87%, a very astisfactory rate when the fact is taken into consideration that over one-third of entire list are triple A ratings.

A very significant fact is the present market value of the investments compared with the cost when purchased. The market price of the entire list on June first was only $4,828 less than the original cost ($406,594) a testimonial to the degree of care that has been taken in securing an unusually stable list, during these times when the bond portfolios of our soundest financial institutions have, in the great majority of instances, suffered severely.

CARE WITH WHICH CONTRACTS HAVE BEEN MADE

The Regents of the University may be interested in the nature and type of contracts which the Foundation Trustees have executed to date. When Dr. Steenbock first announced his discovery it was obvious that the commercial use of the process might be applied to two classes of products:

1. Medicinal preparations, and
2. Foods.

Digitized by Google

It was a matter of much inportance at the outset to determine the potency of the product and see that under commercial use the method was employed in a manner that would be entirely beneficial. In this pioneer field, the Foundation did a large amount of work, aiding the American Medical Association to fix proper standards of potency, methods of test control, etc. In order to prevent any monopolistic situation from developing licenses were granted on identical terms to five leading pharmaceutical houses of the United States and three in Canada (one of which is a quasi-governmental institute for the manufacture of biological products). Highly potent irradiated ergosterol dissolved in corn oil was finally selected. By ultraviolet irradiation, this was given a potency 100 times the vitamin D equivalent of standard cod liver oil. Under the approval of the American Medical Association, the name *Viosterol* was adopted and although certain manufacturers had put out a product under thier own particular brand, the Association insisted on a unification of name, standards of potency, etc. A "fortified" cod liver oil preparation was also authorized. From the very beginning these two products were immediately accepted by the medical profession. Numerous medical reports have now been issued which show the value of these preparations in the treatment and prevention of rickets and other bone deficiencies. Price levels were set by the Foundation so that a reasonable profit for handling could not be exceeded.

FOUNDATION CUTS PRICE OF VIOSTEROL

With a more extended experience coming from wider clinical use, efforts were made to improve the preparations that were first put out. Within six months the potency of Viosterol was increased two and one-half times and on June 1 of this year, a reduced price schedule was made effective so that a much more potent product can now be sold at a price from 20 to 25% lower than a year ago. This naturally reduces the income of the Foundation as the royalty rate is based on the wholesale pharmaceutical selling price, but in the effort to place this product within the reach of the maximum number, this has been regarded by the Trustees as a sound policy to follow in the public interest.

RELATION OF "IRRADIATED" FOODS TO DRUGS

From a purely commercial point of view, the argument might be raised that activation of foods would prejudicially affect the income from the drug field. The Foundation has, however, the basic information after careful tests and clinical observations to show that a wider use of vitamin D will be of material value to health. For that reason, it has felt the obligation to fortify certain types of foods, especially those intimately connected with the nutrition of the young, regardless of the financial implications involved.

In doing so, it has kept constantly in mind the great desirability of maintaining the license system on a dignified and proper basis so as to prevent exploitation of the public. Even the advertising of the respective licensees is subject to control where any mention is made of the Foundation or any of its assignors.

FOOD CONTRACTS

Very few foods contain any appreciable amount of vitamin D. Only egg yolk and to a slight extent butter fat possess any appreciable quantity. Cereal foods are notably deficient, although these products can be "activated." It was this striking discovery of Dr. Steenbock's that made possible a great improvement of foods as to this quality; but much care must be exercised in the use of an agent of this type, although there is no danger whatever in overdosing food supplies. Clinical experience now indicates beyond doubt that even the medicinal dose which is several hundred times more potent than is permitted in a food can be increased over a 1,000 fold before any ill effect can be detected.

Although the Foundation has been solicited by hundreds of applicants, to grant licenses for all kinds of preparations, such as cosmetics, chewing gum, candies, soft drinks, and the like, the Trustees have refused to consider licenses except in the case of a limited number of food products. The income of the Foundation could have easily been increased several hundred thousand dollars per annum had it been willing to give licenses to concerns whose main interest was to find an advertising feature that had novelty and new pulling power. Also, it must be kept clearly in mind where irradiation is practiced, that the treated product must be merchandized in a way to prevent adulteration, mixing, or interchange from

Digitized by Google

point of treatment until the product reaches the consumer. Cartoned, or sealed containers are, therefore, most suitable to use; with bulk goods, no positive assurance can be given the consumer that he is actually protected in what he buys.

So far, vitamin D has been incorporated only in bread, certain health crackers, breakfast foods, and powdered milk. Special effort could well be made to fortify those foods that are of most nutritive value for children, recognizing the importance of getting the "sunshine vitamin" into the system of the city child under winter conditions where reliance on nature's method often leaves a glaring deficiency. The oil and fat field is also susceptible of proper development especially with reference to activation of salad oils.

Some fear has been expressed that too wide a latitude would be followed by the Trustees in developing this food field. The exceedingly conservative attitude which has been taken is the best proof that it is not the intention of the Trustees to violate a sound public policy in this regard.

Indeed one of the soundest reasons for the development of the Foundation as a suitable means of handling the Steenbock process lies in the rigid control through which it is possible to protect the public and prevent unscrupulous commercialism from capitalizing the Steenbock discovery. Had not some such method been devised under which this patent could be properly utilized, the discovery itself would have undoubtedly resulted in irreparable injury to the agricultural development of the state and subjected the University to severe criticism.

The Foundation has an agreement with the Paediatric Research Foundation of Toronto, an organization allied to that university, that is modeled after the Wisconsin plan. No licenses are granted in Canada without the approval of this technical group that is composed of the leading pediatric and medical men of the Dominion.

BREAD CONTRACTS PROHIBIT ANY PRICE ADVANCE

In this connection, it is of interest to note when licenses were granted for bread, a clause was incorporated in all contracts, prohibiting the licensee from charging any more for "irradiated" bread than under similar sale conditions for the untreated product. With this proviso, it is obvious that the licensee must pay an exceedingly small royalty for the use of the process. As a matter of fact, the Wisconsin Foundation's share in these royalties is measured in thousandths of a cent per loaf. From the point of view of building bone and teeth in the growing child, it is much more important to the Foundation to put vitamin D into a hundred million loaves of bread a year, at an infinitesimally small royalty rate than it would be to put it into a special brand that had to be sold at a higher price, and therefore, available mainly to those who belong to the well-to-do class where the cost of the product is not the deciding factor in the diet.

Up to date, the cereal and bread field have been quite completely covered. The Foundation is now ready after long experimental study, to enter the dairy field. The results obtained by world-recognized pediatricians in the milk field, where trials have been made with infants and children show indisputably the very high nutritive value that can be secured from the use of these irradiated products.

SCOPE OF FOUNDATION PATENTS

While the first, and by far the most important patent which has been assigned to the Foundation has been that of Dr. Steenbock, the corporation has also been the recipient of a considerable number of other assignments of patents, either outright, or of applications now pending before the Patent Office. The Foundation has felt it highly desirable to encourage staff members in making such assignments, even though the matter of financial return was none too alluring. In taking over such applications the Foundation assumes the obligation of paying all costs in securing the patents and maintaining the yearly taxes which nearly all countries, except the United States, levy on a patent to maintain it in good standing. Owing to the highly technical nature of patent law and the widely varying mode of procedure which exists in different countries, the problem of securing adequate legal protection in the more important countries of the world involves a large amount of highly technical work for which the individual staff member is not at all qualified to undertake.

Up to date, the Foundation has expended in the neighborhood of $15,700 in securing the eleven patents (or applications) now on its books. In addition, to this amount, legal expenses in foreign countries amounting to several thousand dollars have also been met. In most cases where foreign counsel has been required, arrangements have been made that the necessary expenditures for such

Digitized by Google

service be deducted from foreign royalties, as earned, so as not to incur a direct charge against the Foundation receipts.

It is of interest to note that the income taxes that the Foundation has already paid in Great Britain exceed $15,000 before the residual income could be remitted to the United States.

ASSIGNMENTS OF PATENTS BY MEMBERS OF THE UNIVERSITY

Soon after the organization of the Foundation, it became necessary for its Trustees to consider what should be done as a standard policy regarding the acceptance of assignments by members of the University staff who might voluntarily desire to have the Foundation aid them in promoting their problems of patent development. It is only now and then that a method or process is likely to be discovered or invented which is worth considering from a patent point of view. The great bulk of the scientific work of the University always will and should be of such a nature that the question of patentability is not even likely to arise. In the interests of social service, especially as applied to a state-supported institution, the Foundation will discriminate most closely as to what discoveries should be commercialized in this way. When this problem was carefully considered, it was found upon inquiry, that there was a strong feeling that it would be better to offer the discoverer some financial recognition, after the expenses of securing the patent had been defrayed. This follows the same general principle that is often followed in private organizations.

Consequently, Memorandum Agreements were worked out in which the division of "net avails," after all expenses had been repaid, was made on the basis that the patentee receive 15 percent while 85 percent went to the Foundation.

In Dr. Steenbock's case, he was not willing that the rule should be applied. From the outset, it was his thought that the entire net royalties would go for the support of research. It was only after it was pointed out to him that the Foundation could not wisely operate on the basis of two different methods of control that he finally consented to abide by the judgment of the Foundation Trustees.

No royalty payments were made to him during the first year's operations, but during the last two years the regular 15 percent royalty payments have been made to him after the operating expenses of the Foundation's activities have been met from monies obtained wholly from the Steenbock royalties.

COMMERCIALIZATION OF OTHER PATENTS

Up to date, the energies of the Foundation have been directed toward a reasonable occupancy of the commercial field of the Steenbock patent. Nevertheless, efforts are also being made toward the commercial use of some of the other patents as rapidly as opportunity permits.

The Hisaw method for the production of certain hormones has been contracted with a leading pharmaceutical house, as has also the Hart method of using copper with iron in the treatment of certain nutritional anemias, but it will be a year or more before any avails will be forthcoming. With several other patents, the preliminary experimental work has been carried out. What is now needed as to push the economic utilization of these methods.

Another difficulty which confronts the Foundation is that the range in scope of the patents controlled, runs through such a wide field that it will be quite beyond the limits of any single organization to engage in developmental work in so many different branches of human knowledge.

By and large it will probably cost somewhere from 15–25% of the receipts of even successful patents to cover the necessary expenses connected with their completion and development. Assuming an average net income of 80%, and that 15% of the net avails goes to the inventor (12% of total received), the Foundation is then in position to add 85% of 80% net (or nearly 68% of the total) to its investment principal. It is from this invested principal that the support of research should first be considered.

Much is going to depend on the magnitude and number of unforeseen factors that are almost sure to be injected into the problem. The largest and most uncertain item is what may be required for litigation and infringements. This, no one can estimate beyond the present. Already we have several suits on our hands. Some of these we are bringing and in some cases we are being sued. From the standpoint of permanence, it is desirable to have some of these questions adjudicated in the near future so that the Foundation may know definitely what it has to work with. In any event, it is obligatory upon the Trustees that the Foundation

Digitized by Google

is well intrenched financially so as to be able to fight its legal battles, if necessary. The policy of the Trustees has been to divide the cost of any possible litigation with its licensees, the Foundation assuming one-half, and all the licensees collectively an equal amount. Strong commercial concerns have, however, indicated an unwillingness to enter into contractual relations with an organization unless they are assured of sufficient financial backing that possible litigation could be aggressively met.

PATENTS AND APPLICATIONS NOW ASSIGNED TO FOUNDATION

Appended below is a list of the various patents and applications that are now the property of the Foundation:

Name	Description	Patents (or applications) in—
Harry Steenbock	Antirachitic activation of medicinal and food products by ultraviolet irradiation.	United States, Canada, Great Britain, France, Belgium, Germany, Argentine, Italy, Norway, Sweden, Denmark.
E. B. Fred, W. H. Peterson	Improvements in Process of Producing Lactic and Acetic Acids.	Germany, United States, Canada, Norway, Sweden, Brazil, Argentine, Great Britain.
W. Busse	Liquid Air for Freezing of Hard Shell Seeds.	United States.
E. B. Hart	Use of Copper and Iron Salts in Anemia.	United States.
P. A. Tetrault	Acetic Acid and Glucose Fermentations of cellulose.	United States.
J. A. E. Eyster	Apparatus for Measuring Venous Pressure.	United States.
E. O. Wiig	Leavening Agent	United States, Great Britain, Germany, Sweden, Norway, Argentine.
F. Daniels	Mechanic's Cleanser	United States.
F. L. Usaw	Pituitary Hormones	United States.
L. C. Hurd	Marine Paint	United States.

ALLOCATION OF FUNDS FOR RESEARCH

The Foundation Trustees have, during the past year, worked out a system of considering and acting on requests for grants-in-aid to research. Obviously, it would be unwise for the Trustees to consider such a program on a piecemeal basis, as financial commitments should take into consideration the available funds as well as all requests that are made. Therefore, action was taken setting a definite time for the consideration of requests.

In view of the fact that the University Research Committee makes its recommendations regarding the distribution of special research funds, which it has at its disposal, in the spring of the year for distribution in the following fiscal year, the Foundation Trustees decided to adopt a similar mode of procedure.

The advantage of this system is that the Foundation's resources should be integrated with the University's problem so there will be no duplication. The Foundation, therefore, has adopted the policy that all of its aid to research will be made through the regular University machinery for such purposes, and not directly from the Foundation to any individual or department.

After the requests for grants-in-aid have been approved by the Foundation Trustees, the lists of projects and accompanying grants are submitted through the Dean of the Graduate School and the President of the University, to the Board of Regents of the University for their consideration. If approved and accepted by them as meeting the University policy with reference to gifts, the Foundation Treasurer then transfers to the Secretary of the University the requisite monies, the Secretary setting up the necessary credits on his books for the respective projects. All requisitions and expenditures are then made by the staff member in charge in the same manner as with all other University expenditures. In this way, the University officials retain full and complete control of the nature of the project studied, appointment of all staff members working on the same, all expenditures made, and a complete disposition of results as to mode of publication or otherwise.

By close dovetailing of these relations and a sympathetic attitude toward the promotion of research from the broadest possible point of view, the Foundation feels that its resources are being most wisely used to supplement funds available to the University from other sources.

Digitized by Google

DIGEST OF AID ALREADY GIVEN UNIVERSITY

As the earliest contracts which the Foundation executed did not take effect until about the middle of 1929 and as income from the same did not, in some instances, become available until even later that year, the aid for research could not be begun until well into the fiscal year of 1928–1929.

Recognizing the desirability of having some definite policies to follow, the Foundation Trustees have adopted three general principles to guide them in the allocation of funds:

1. To stimulate as wide an interest as possible in the entire graduate body of the University, it was decided to maintain a:

(a) *Lectureship in Science* that would bring to the student body of the University annually an outstanding man in some special field of science, who would give a week of his time to lectures and discussions. $1,000 a year has been earmarked for such purpose to cover this project. The first year Dr. Walter B. Cannon (Physiology) of the Harvard Medical School was invited; last winter Dr. Ross Gortner (Biochemistry) of the University of Minnesota. For 1931–1932 the University Committee is happy to announce that Professor Milliken of California, the outstanding physicist of the United States, has been secured. The selection of the incumbent to this special lectureship is made by a faculty committee of which Dean Slichter of the Graduate School is chairman. From the reaction of the graduate student body, no move has been made recently at Wisconsin that has been more stimulative and inspiring to this body. It was felt in this way that the entire University student body would be aided by the first fruits of the Foundation's efforts.

2. Selection of definite lines of scientific endeavor toward which the Foundation could give special aid.

The University will, naturally, be unable to furnish sufficient funds for the prosecution of all desirable lines which its staff is equipped to push. The test that can probably be expected is to select those lines that are likely to yield the most for the expenditure of the taxpayer's money. But a University that is to go forward in step with the best of modern science must constantly be attacking many problems in a fundamental way. This means going into new and untried fields, with no assurance that the results which may be found will immediately prove to be of great value to the state.

The Foundation derives its support primarily from a discovery that was undertaken without any thought that it would prove commercially profitable. It feels that monies invested in this spirit cannt be wholly lost, and it also feels that it can thus be of major value to the enlargement of the University's program for the support of such fundamental research.

As a consequence, after consultation with the Research Committee, the Dean of the Graduate School and with staff members, it was decided by the Trustees that the greatest service which they could render the University would be through the selection of a limited number of fields that were already engaging the attention of University scientists to some extent at least; that a substantial amount of aid be rendered in these special fields, especially if problems of a fundamental character could be attacked. On the basis the Foundation would then supplement the existing University resources in a way that would broaden as well as deepen the University science research.

(*a*) *Mold Research.*—In accordance with this plan a year ago, the Foundation Trustees placed at the disposal of the Regents, the sum of $10,000 a year (on a five year program) for the purpose of studying fundamentally the physiology of the fungi, more particularly the molds. From this fund the physical facilities have been provided, laboratories being remodeled in the basement of Agricultural Hall for bacteriological work under Dr. Fred's direction and a biochemical laboratory in the basement of the Agricultural Chemistry Building under Dr Peterson's direction. The work here undertaken is to study from a pure science point of view, mass cultures of different molds to ascertain their physiological properties and effects. Guided by these two investigators, a specially selected staff has been making definite and valuable progress in this field.

(*b*) *Hormone Field.*—To those who are scanning the scientific horizon for the most interesting and fruitful opportunities to expand the field of definite scientific knowledge, no field offers more promise than that which is embraced in the relatively new subject of the hormones, those peculiar secretions of the ductless glands in the human and animal body, the function of which for centuries has largely baffled scientific thought.

Digitized by Google

The concepts of modern physiology and medicine are likely to be as profoundly affected by these studies in endocrinology as has been witnessed in the field of human and animal nutrition through the discovery of the vitamins. A number of the physiological laboratories of several Universities have been the recipients of material aid from some of the educational foundations. Dr. Evans of California, has been able to advance his studies very rapidly through a $50,000 grant which was made to that institution by the Rockefeller Board.

Wisconsin has on its staff one of the leaders in the hormone field in the entire country. Dr. Frederick L. Hisaw of the Department of Zoology. The Foundation has been aiding Dr. Hisaw for the past two years, allotting in 1929–1930, $1,500, and last year $3,050 to make it possible for him to secure additional chemical help. This coming year it is proposed not only to continue this chemical aid to Hisaw, to the extent of $3,500, but the Foundation has agreed to support two additional projects that are closely correlated with his investigations, viz, $850 to Dr. Sevringhaus for research on the clinical use of the Hisaw Hormone, and $900 to Dr. Tatum of the Pharmacological Department for clinical work in controlling toxic goiter.

(*c*) *Vitamin Field.*— Naturally, the Foundation is especially interested in the continuance of research in the most aggressive manner in the field of the vitamins. For the past fifteen years, Wisconsin has been in the foreground in this phase of biochemistry. The researches of McCollum, Hart, Steenbock and their colleagues have made the Wisconsin campus one of the outstanding, not only in the United States, but for that matter, in the entire world. Graduate students from many of the advanced countries have sought the inspiration of these laboratories. It has, therefore, been possible to push investigations in this field very steadily, as often a small amount of aid has enabled a relatively large amount of work to be accomplished. The University has always recognized the desirability of granting some aid from its own research funds in this vitamin field to Dr. Steenbock and Professor Hart. The Foundation Trustees also made available in 1928–1929, $2,500 for Steenbock to be used under Dean Slichter's administration. As this was not all used in that fiscal year, the balance was carried over to the fiscal year 1929–1930. For this coming year (1931–1932) the Foundation has allotted $1,550 to enable a fundamental study to be made on the physiological effects on the different parts of the ultra-violet spectrum. A correlation of a physical and a biological study of the radiant energy from this invisible part of the spectrum will contribute, it is hoped, to a definite solution of some most important problems.

3. It would not be wise for the Foundation to allot all of its available resources to two or three lines of work of long-time duration. The Trustees have also been willing and anxious to consider all requests made covering the several fields and for short time purposes. For these requests several thousand dollars have been thus employed.

(*a*) *University Computer.*—For the past two years, the position of University Computer has been supported by a grant of $750 a year. This assistant is selected by a special faculty committee of which Professor Mark Ingraham of the Mathematics Department is Chairman. Requests made by any department of the University requiring intricate mathematical computations are considered by this group before the time of the computor is placed at the disposal of the applicant. In this way, six or seven departments of the University have been able to facilitate their statistical studies. Professor Ingraham is strongly of the opinion that this work should be put on a permanent basis. The Foundation Trustees feel that this is a phase of service work rather than a specific research problem which would seem more appropriate for support from their resources. Nevertheless, at the urgent solicitation of the Ingraham Committee, the Trustees continued the grant for another year again making $750 available for the purpose.

(*b*) *Aid in Physics and Chemistry.*—During the past year (1929–1930), the Foundation paid the salary of Professor Roebuck ($3,000 for the second semester), and also $450 for the employ of summer assistance to enable him to put his entire time on certain physical research of a wholly fundamental character.

$1,200 was also made available to furnish assistance to Professor Freudenberg, the Carl Schurz Exchange Professor in Chemistry. His acceptance of this exchange relation was contingent upon the University furnishing necessary laboratory assistance.

Digitized by Google

AMOUNT ALLOTTED FOR RESEARCH IN 1931–1932

The Foundation Trustees have just allocated the sum of $21,500 for grants-in-aid to research for the coming fiscal year. From the various requests made, support has been extended to the Departments of Pharmacology. Clinical Medicine and Physiology in the Medical School; Zoology and Physics in the College of Letters and Science; and Bacteriology and Agricultural Chemistry in the College of Agriculture.

Two general projects, the University Computer and the Foundation Lectureship, are not limited to any single group, but serve the University as a whole. This will make a series of nine different projects to which aid will be extended for the next year.

If the Regents accept this program, the monies will be transmitted, as in the past, to the University Secretary for deposit to the credit of these respective projects and all expenditures for operation and staff appointments made through the customary university administrative machinery.

FOUNDATION CONTROL LABORATORY

The rapidly expanding activities of the Foundation in taking on contracts for the utilization of vitamin D necessitates no inconsiderable amount of routine testing of activated products so that the public can be positively assured that they are getting intrinsic vitamin values what potency has been determined as necessary and desirable.

It is, of course, highly desirable that this control work be quite divorced from the research work of the University; otherwise the load of routine would seriously sap the research vitality of those concerned with the same.

Two courses of procedure were presented to the Regents last fall, viz.:

1. Arrange with the Regents for the provision of space in existing buildings in which this work could be done on the basis that other arms of the State ask the University to house certain laboratory operations rather than duplicate new buildings for the purpose. If this arrangement was not practicable then,
2. The Foundation Trustees would construct a laboratory wholly outside the University and equip and operate the same.

The Regents recognized that an expenditure of Foundation funds for capital expenditures would be unwise: that such a course of procedure would make it impossible for the Foundation to be of any material aid in University research for some time. Hence, they approved the first plan, the Foundation Trustees assuming, however, all expenses required to make the physical changes in the Agricultural Chemistry Building where this control laboratory is located. The Foundation has spent to date about $3,500 for constructional changes, and is carrying a pay roll and maintenance cost for the operation of this control laboratory which is about $7,500 a year.

The Regents also placed at the disposal of the Foundation Trustees, a room in Bascom Hall for an executive office, which the Foundation has furnished and equipped. The Foundation pays rent, however, to the Regents for the use of all space occupied by it. The convenience of having the official quarters of the Foundation at the University rather than downtown is apparent, as the daily contact of the Foundation officers is mainly with the administrative and scientific staff of the University rather than with the town public. Incidentally, it may be mentioned that it is necessary also to maintain a Chicago Office as the legal work of the Foundation is handled through several Chicago firms and much of the business of the Foundation is more conveniently handled out of Chicago than Madison.

When the work of the Foundation was started two or three years ago, no one then realized how rapidly it would expand. In this short time, its business ramifications are already world wide, a gross royalty income measured in several hundreds of thousands of dollars per annum has been built up, and the field of only one patent has yet been touched. Legal complications are already on the horizon; contract interpretations require adjudication. Scientific work must be pushed in sundry fields. New patent applications are coming to the Foundation that will require much attention in the very near future. In short, the idea that was launched with considerable trepidation a few years ago has already reached proportions far beyond expectations.

Digitized by Google

With no previous experience to guide, it would be rash indeed to forecast the future. It will be the policy of the Trustees to move cautiously but progressively forward. In any event, an exceedingly interesting educational project has been launched at the University. Its uniqueness may well intrigue the interest and attention of those who are searching for what the future may hold toward the advancement of educational ideals.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Chicago, Ill., September 19, 1942.

E. I. du PONT DE NEMOURS CO.,
GELATIN PRODUCTS CO.,
GENERAL FOODS CORPORATION.
STANDARD BRANDS, INC.
VITAMINS, INC.

GENTLEMEN: We take pleasure in announcing that the Foundation has entered into modified license agreements with its five pharmaceutical licensees under which those licensees have given up their exclusive rights in the pharmaceutical field. Effective immediately, therefore, the foundation is in a position to grant additional licenses for the use of Steenbock vitamin D in pharmaceutical products for human consumption.

We have prepared and are enclosing supplies of printed license agreements. As you will note, there are two forms of license agreement. One is for companies which should, in the opinion of the foundation, be permitted to use the foundation seal upon one or more of their products. The other form of license agreement does not permit the use of the foundation seal. For your help preliminarily, we have prepared and are enclosing a list of companies which we believe are qualified to use the foundation seal licenses. This list does not purport to be complete and we shall be very happy to consider promptly, as possible seal licensees names of any other concerns which may be submitted by you.

In view of the foregoing you are now free to sell Steenbock vitamin D for pharmaceutical use to licensees of the Foundation, including those now licensed and those which hereafter may execute either of the enclosed forms of license agreement. As a matter of procedure, we suggest that when you obtain signatures to either of these forms of license agreements by your customers, you arrange to have triplicate originals executed by the customers and send all three originals to us for execution by the Foundation. We will then return two originals to you, or one executed original to you and one to your customer. We also suggest that prior to obtaining executed agreements from your customers you be sure to fill in or have filled in the blank spaces in sections VI and VIII of the seal form of license (providing, respectively, for product formulas and products upon which the seal may be used) and in section VI of the nonseal form (providing for product formulas). This will facilitate completion of agreements by the Foundation, since the Foundation will wish to have these clauses filled in before executing any license agreements.

We also call your attention to section V, the royalty provision, in each of the enclosed forms. We believe that the simplest way to handle the royalty matter is for the supplier to pay the royalty of 10 cents per million units on vitamin D sold to user licensees rather than to have the user licensee pay this royalty directly to the Foundation. However, the latter method of procedure may be followed if you wish.

We are hopeful that you will be able to obtain substantial new business in this field and are looking forward to a marked expansion of the use of Steenbock vitamin D as a result of opening the pharmaceutical field upon a nonexclusive basis.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By ——— ———, *General Counsel.*

JULY 31, 1931.

We were much interested in memorandum of July 13, and hope that uniformity may be obtained and continued in the distribution of Viosterol.

We hardly feel it necessary or desirable for us to send out a letter to our wholesale trade, because we have not found any price-cutting tendencies. Our field

Digitized by Google

force, together with district and branch managers are continually in touch with our wholesalers and if any variation from price schedule occurs on our label, we believe that we would be informed without delay.

Yours very truly,

JUNE 2, 1933.

WISCONSIN ALUMNI FOUNDATION,
Madison, Wisc.
(Attention Dr. H. L. Russell.)

DEAR DR. RUSSELL: I have before me bids on Viosterol 5 cc. packages and 50 cc. packages and Viosterol with cod-liver oil 3 ounces and 16 ounces made by a number of firms to the United States Veterans' Bureau Proposal No. 871, opened May 28, 1933, at 11 a. m.

Among the firms bidding is Bundt, Inc., of Detroit. This is the second bid they have made at a lower price than any of the licensees of the Wisconsin Alumni Foundation. Their first bid was accepted at much lower prices than those agreed upon with the foundation.

This was brought to our attention by Mr. Keim, who stated that Bundt, Inc., were putting up their own product and that one of their packages was in the possession of Squibb & Co. You may have heard from Mr. Keim about this.

My purpose in calling this to your attention is to inquire if this is not in violation of our agreement, and if it is not possible to bring some pressure to bear on Bundt, Inc., in order to eliminate this unfair price cutting. You may wish to investigate and let us know if anything can be done.

Very truly yours,

S. DEWITT CLOUGH, *President.*

[Handwritten.]

Mr. Clough—I phoned Mr. Melville—F. W. Ken Co., and he seemed to be somewhat alarmed by my calling, said he would write me details.—RMC.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
Madison, Wis., April 18, 1939.

Mr. RICHARD L. FRUCHTERMAN,
Standard Brands, Inc., New York, N. Y.

DEAR MR. FRUCHTERMAN: Confirming conversation which Messrs. Ross and Barney had with you in New York on March 3, it is agreeable to the Foundation that your Company employ irradiated yeast as a source of vitamin D in your present product "Fleischmann's Vitamin Tablets" containing 150 U. S. P. vitamin D units per tablet—such products to be manufactured and sold by Standard Brands Inc., or its subsidiaries anywhere in the world except the United States, Germany, and Great Britain (including Ireland and the Isle of Man).

The royalty basis for this product will be 15 cents per million U. S. P. vitamin D units used, the same royalty as we are shortly making effective in the United States for products of our pharmaceutical licensees not now containing irradiated Vitamin D.

If at any time the Foundation reduces its royalty basis below 15 cents per million U. S. P. Vitamin D units to any of its pharmaceutical licensees, it will automatically make a similar reduction in your royalty basis.

We do not believe it necessary to prepare a supplemental contract covering this subject, and if the foregoing is agreeable to you as outlining the understanding with respect to this product, kindly indicate your acceptance at the foot of this letter on the second copy enclosed and return to this office.

In the event that you are interested in marketing this product in Great Brtiain we suggest that you contact Col. E. A. Rose of Glazo Laboratories, Ltd. London, and discuss with him the matter of terms for a possible sublicense under the Steenbock British Patent.

Very truly yours,

WISCONSIN ALUMNI RESEARCH FOUNDATION,
H. L. RUSSELL, *Director.*

Accepted:

STANDARD BRANDS INC.,
By THOMAS L. SMITH, *President.*

Digitized by Google

EXHIBIT A

MEMORANDUM OF AGREEMENT, Made this 10th day of November, 1928, between WISCONSIN ALUMNI RESEARCH FOUNDATION, a Wisconsin corporation not for pecuniary profit, hereinafter called the "Foundation," HARRY STEENBOCK, of Madison, Wisconsin, hereinafter called "Dr. Steenbock," I. G. FARBEN INDUSTRIE AKTIENGESELLSCHAFT, a German Corporation, hereinafter called "I. G." and THE WINTHROP CHEMICAL COMPANY, INC., a corporation of the State of New York, hereinafter called "Winthrop."

Dr. Steenbock is Patentee and the Foundation is Assignor in the United States, Great Britain, and in certain other countries, of inventions dealing with anti-rachitic Products and Processes and has applied for patents thereon in certain other countries, and as the I. G. has contemporaneously been engaged in research along similar lines and there are pending applications for patents in a number of countries, including the United States and Germany, on the inventions of Dr. Windaus for products and processes for activating or irradiating ergosterol and its derivatives as an anti-rachitic, in which inventions and patents in the United States, Winthrop has the equitable ownership.

Recognizing the desirability of making immediately available the results of the scientific investigations which have been carried on by them and of avoiding controversy which might hamper the progress of the research in which all parties are engaged and thus obstruct the use of discoveries of benefit to humanity.

The parties agree:

(1) To cooperate with each other and act together to secure the prompt patenting of pending applications, and not to oppose or obstruct the issuance of patents thereon.

(2) Save for rights heretofore granted to The Quaker Oats Company, Dr. Steenbock and the Foundation grant to I. G. the exclusive right and exclusive license to Germany under all patents which may be there issued to Dr. Steenbock or acquired by the Foundation, for all uses and for all products, without royalty. The field of said The Quaker Oats Company shall be excluded from this contract for the life of said patents, which field covers the right to give anti-rachitic qualities to the following products; rolled oats and oat meal, puffed rice, puffed wheat and other puffed products, corn meal and corn flour, pancake flour and macaroni, stock and poultry feeds and other cereal products except wheat and rye flours and except cereal oils and save for breakfast foods except crackers, biscuits, cookies, breads and other similar products of wheat and rye flours.

(3) In consideration of which I. G. and Winthrop agrees not to sue any present or future licensee of Dr. Steenbock or the Foundation in any country (except Germany) for infringement of any patent on activated or irradiated ergosterol and its derivatives which may issue on the applications for patent of Dr. Windaus or his assignee, now pending.

(4) Dr. Steenbock and the Foundation grant to I. G. a nonexclusive license to manufacture and sell activated or irradiated ergosterol and its derivatives in all countries except the United States and Great Britain (including North Ireland and the Isle of Man) where licenses have already been given to others. In Great Britain, Dr. Steenbock and the Foundation undertake, if I. G. so requests, to use their best endeavors to secure a nonexclusive license to I. G. on the same terms and conditions as given the most favored licensee.

(5) In consideration of the grants herein made to I. G., it agrees to pay to the Foundation for the promotion of research during the life of this contract, the sum of Twenty-Five Hundred Dollars ($2,500.00) annually, the first payment to be made forthwith. For the same purpose, it also agrees to pay to the Foundation annually for three (3) years the sum of Five Thousand Dollars ($5,000) (the first payment to be made one year from the date hereof), and agrees to pay annually thereafter the sum of Ten Thousand Dollars ($10,000). The said $5,000 and $10,000 payments are to be credited each year against royalties. I. G. agrees to pay to the Foundation a royalty of Three percent (3%) on the net sales price of medicinal and pharmaceutical preparations made or sold by or through it, or its agents, containing activated or irradiated ergosterol or its derivatives in whatsoever quantities anywhere in the world save in Germany, the United States, and Great Britain and regardless of the existence or nonexistence of patent rights possessed by Steenbock or the Foundation where made or sold.

(6) Except for the United States and Great Britain (including North Ireland and the Isle of Man), I. G. is granted the right to make and sell and the right to

Digitized by Google

sublicense proper sublicensees as hereinafter defined, to make and sell irradiated food products (whether directly irradiated or indirectly activated by the use of irradiated ergosterol or its derivatives). For irradiated food products made by it or its agents, I. G. shall pay to Foundation a royalty of One percent (1%) of the net sales of the food products thus made and sold. If I. G. shall grant sublicenses such sublicensees irradiating food products directly or indirectly shall be required to pay to I. G. a minimum royalty of One percent (1%) of net sales. As to such royalties from sublicensees, I. G. shall pay the Foundation Seventy-five percent (75%) and shall retain for its services in securing said sublicensees, supervising their conduct, making collections and otherwise handling the business with them the other Twenty-five percent (25%) of said royalties.

(7) The term "net sales" used herein means the listed selling price minus discounts to the trade and makes allowance for returned goods.

(8) Payments of royalties required hereunder shall be made within ninety (90) days following each calendar quarter beginning January 1, 1929.

(9) Proper sublicensees referred to in clause (6) hereof shall mean firms financially responsible, which conduct their business upon sound, ethical, and scientific lines and deal in worthy products.

(10) Any advertising material referring to the Steenbock process, the Steenbock patents or the University of Wisconsin or the Foundation shall be submitted to the Foundation for its approval. This requirement shall be made by I. G. of sublicensees and the I. G. shall see to it that all advertising is free from misstatements.

(11) The I. G. shall properly comply and require all sublicensees to comply with all statutory or legal requirements pertaining to the marking of patented articles.

(12) Inasmuch as all royalties paid hereunder are based upon net sales of pharmaceutical or medicinal preparations employing activated ergosterol or its derivatives or upon net sales of food products, the I. G. shall furnish the Foundation on dates when royalty payments are due, a statement of the business done in each field which may be properly checked, if ever required, by the Foundation, by neutral certified accountants.

(13) If any payments herein covenanted to be made shall be in arrears and unpaid for a period of ninety (90) days after becoming due or if the I. G. shall commit other breaches and not remedy the same within ninety (90) days after written notice to it by the Foundation, the Foundation may, by notice in writing, determine the license but without prejudice to its rights to recover royalties then due.

(14) The term of this license shall be the life of the German Steenbock Patent when granted.

(15) This license may be determined by the licensee at any time after three (3) years from the date thereof by notice in writing addressed to the Licensor three (3) months before the expiration date named in said notice.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the date first above written.

WISCONSIN ALUMNI RESEARCH FOUNDATION,
By GEORGE I. HAIGHT, *President.*

[SEAL]

ATTEST:

L. M. HANKS, *Secretary.*

HARRY STEENBOCK [SEAL]

I. G. FARBEN INDUSTRIE AKTIENGESELLSCHAFT

By the directors:

P. MANN.
OTTO DOERMER.

WINTHROP CHEMICAL COMPANY, INC.,
By W. E. WEISS, *Vice President.*

[SEAL]

ATTEST:

P. J. ROSENHEIM, *Secretary.*

Digitized by Google

EXHIBIT No. 143

PROPOSED SUBSTITUTE G. E.-A. T. & T. LICENSE AGREEMENT

JUNE 30, 1932.

MEMORANDUM FOR MR. C. P. COOPER, VICE PRESIDENT

I have your memorandum of yesterday transmitting copies of the latest (June 28, 1932) draft of the proposed substitute G. E.-A. T. & T. license agreement, and asking for prompt suggestions and comments on this draft.

While I have looked through the proposed substitute agreement, I have not had time to analyze the various provisions in detail. This will obviously take some time. I note, however, that the present draft still contains the fundamental objection which I had to the earlier drafts. Consideration and appraisement of these fundamental points rather than a detailed analysis of the specific rights given and acquired are, I think, the controlling factors.

The two fundamental objections which I have to the proposed agreement are:

1. Its long term (22½ years) with a further diminishing influence for an additional 17 years (minimum).
2. The fact that we obligate ourselves for 22½ years *in advance* to turn over non-exclusive rights under substantially *all* of our patents and inventions to General Electric et al.

The fact that in return we are assured of certain non-exclusive rights from this group during the corresponding periods seems to me entirely inadqeuate compensation for the price we will have to pay. Consideration of these two factors convinces me that as a business proposition the proposed agreement is highly objectionable and is not one which we would for a minute consider entering into unless there were further compelling reasons and/or very substantial values entirley outside of the agreement itself.

I have not attempted to develop the magnitude and worth of values outside of those conferred by the proposed agreement itself nor to appraise the force of those factors which have led us thus far into the consideration of a long-term all-inclusive cross-licensing agreement as a substitute for the 1926 agreement, on which we have already served notice of cancellation. Unless the present jeopardy, as a result of failure to execute some such agreement as is here proposed, is absolutely compelling, it seems to me that we should use every effort to find another way out of our present difficulties, even possibly to the extent of taking the risks involved in the outcome of the anti-trust suit.

In considering the proposed agreement we are not much interested in comparing its provisions with those of the 1926 agreement. If the alternative for the 1926 agreement over a certain period of years was the proposed agreement over the same number of years, I think there would be little question but that the second agreement was decidedly preferable. What we are interested in is a comparison of the situation which would develop under the proposed agreement contrasted with the situation which will work out of the 1926 agreement under the terms of the cancellation, that is, a situation where a couple of years hence we will begin to regain full possession of the fruits of our own creative work.

As a straightforward business proposition for the future I am strongly of the opinion that our present situation, namely, that in which we will gradually work out from under the 1928 agreement, is better than any blanket agreement for a long period of years which we could draw up. If, however, the exigencies of the case are such that final judgment demands the execution of a blanket interchange of licenses, I most certainly would insist either on a very much shorter normal term for the agreement than the 22½ years now proposed, or would insist on incorporating in the document a definitely stated method of cancelling the arrangement after a few years, if experience or changed conditions or laws indicated to either party advisability of terminating the arrangement.

While my main objections to the suggested agreement are those just mentioned and discussed later on, a cursory reading of the last draft seems to indicate some things which should either be eliminated or modified. For example, paragraph 2 of Article V, which relates to the use of tungsten by us provides, in addition to certain licenses and the manner in which we shall purchase tungsten.

Digitized by Google

"The Telephone Company agrees that, on all sales of telephone and telegraph signal lamps or telephone and telegraph ballast lamps to other than Companies of the Bell System---------- it will pay to the General Company a royalty of ,2 percent on the net sales price thereof."

While I have not checked this accurately against the wording in the original agreement, I think that the proposed provision is unaltered. When the original agreement on which we have now served notice of abrogation was written, there was some justification for this provision. The situation as regards tungsten patents has, however, changed materially in the time which has elapsed, and if my understanding is correct there are now no controlling patents which would justify us in binding ourselves in the future to any such royalty payment.

Coming now to the two points which seem to me fundamental and controlling objections to the proposed arrangement, I will discuss them in the order noted above.

TERM OF THE PROPOSED AGREEMENT

If executed in its present draft form, the license agreement would normally run for at least 22½ years, with rights continuing for at least 17 years thereafter. Even 22½ years carries the term of the agreement beyond the point of service of any of us who are now in responsible charge of the business. It presupposes a certainty about the future which assuredly cannot exist either as regards the interests of the Bell System, the necessity for meeting unforeseen attacks upon it, the character of the anti-trust laws, or the state of general public opinion. Whatever the terms, any such long term agreement which places in the hands of others, and in advance of their creation, valuable rights which may be sorely needed to safeguard and advance the interests of the Bell System, is a highly dangerous affair.

Our experience with the 1920 and 1926 agreements should, I think, make us very chary about long term blanket arrangements of this kind. That experience certainly shows how far we can be in error in our attempts to forecast the future.

The normal duration of the 1920 agreement has 10 years, with possible cancellation on 3 years' notice thereafter, or a minimum expectancy of life at the time of signing of 13 years. Within 2 or 3 years after its signing conditions had become so bad that the parties to the agreement resorted to arbitration, the results of which were the abandonment of the original agreement and the execution of the July 1, 1926 agreement.

This latter agreement provided for a normal term of only 7 years, that is, about one-half that of the 1920 agreement, and provided further that notice of cancellation could be served on or after July 1, 1930, that is, after a period of four years of trial. While we did not serve notice of cancelation until 1931, the onerous character of the agreement was apparent before July 1, 1930.

It is now proposed that we enter into an agreement whose normal life is more than three times that of the agreement on which we have served notice of abrogation, and almost twice that of the original 1920 agreement.

If one desires to get a vivid picture of what this interval of time may involve, we have only to look backward a corresponding period of years in the history of our own business. On January 1, 1910, we had no vacuum tube amplifiers, no carrier current, no voice frequency telegraph, no permalloy, no picture transmission, no radio telephony, no loud speakers, no high quality instruments and none of the refined tools for advancing the communication art which have been developed in the last ten or fifteen years.

The vacuum tube did not appear on the scene in any usable form until about the beginning of 1913. Substantially the whole industrial application of electronic physics has been accomplished in the last fourteen or fifteen years. The big advances in many other branches of modern physics have taken place in a lesser time. In the few years between 1913 and 1920, acting under the stimulus of a free and untrammeled field for development, a very large part of the basic work which has made possible our modern telephone plant and service, was done. The momentum of this work carried on for some time after the signing of the 1920 agreement. It took some time for us to realize the effects of the deadening influence of the 1920 and 1926 agreements on our creative activity.

Although no one can, of course, predict the future with any high degree of assurance, it seems almost certain that progress of industrial research and the industrial applications of science throughout the world in the next ten or fifteen years will be as great as or greater than that which has thus far occurred in double the length of time. The base of fundamental scientific knowledge is infinitely wider than it was ten or fifteen years ago, and the number of trained men engaged

Digitized by Google

in applying this fundamental knowledge is many times greater. In the field of electronic physics alone the pace of development is tremendous. There is hardly a field of industrial application which is not concerned with some phase of this branch of modern physics. There is consequently no foretelling where revolutionary and controlling discoveries may be made. Since under the patent laws these discoveries are not common property, any industry likely to be affected and which is concerned about its future welfare must be prepared to do its part in the development race, and to maintain maximum flexibility of movement under its patent rights, or face the necessity of possible heavy monetary tribute or even the question of its ability to live and prosper.

Of course it might be argued, in connection with the duration of the proposed agreement, that it will not in all probability live its normal minimum life. Personally I think it most certainly will not. There are too many unknown factors involved in the problems of the developing business of the contracting parties, in changing laws and in changing public opinion. I do not see, however, that this is any justification for our embarking on a course, escape from which may later entail an equally onerous though different entanglement.

CHARACTER OF THE PROPOSED AGREEMENT AND ITS FAR-REACHING EFFECT ON THE FUTURE OF THE BELL SYSTEM

The proposed agreement is not a free interchange of nonexclusive licenses between the contracting parties. It is an interchange of nonexclusive licenses with limitations of use. In many cases the grants are unilateral and in others, and as 4C of Article VI, the limitation of field is such as to make the apparent grants to us actually of little or no value.

Broadly speaking, the practical effect of the agreement is to limit the field of possible development of each party to its present major activities. Where unilateral grants only are made it is clearly impossible for the granting party to contemplate successful competition when confronted with an adversary who has both his own and the other person's patents. Even where bilateral licenses are made, there is probably little danger of competition by the grantee in fields where the grantor has already attained to a commanding position.

Thus, while a casual reading of the agreement by one not thoroughly conversant with all the factors may appear to establish the basis for an enlarged free development in most of the fields, this is not actually the case.

Now, what are the respective fields in which the two parties appear by the agreement to be granted enlarged ability to grow and develop? Whether by definition or the limitations on the grants, the Telephone Company's field is substantially that of its present business, while the General Electric's field is everything else, including a substantial field of communication.

If we could see clearly that at no time in the next 22½ years would it become advantageous for us to be in any way active in any field outside of what we are now doing, and if the proposed agreement was one with *all* the other creating agencies in the world, the proposed agreement *might* be advantageous even though it had the inevitable result of very greatly narrowing our own creative effort. We would then at least be assured of entire freedom to use in our current business all of the discoveries and inventions which pertain to it. * * *

But the proposed agreement is not one with *all* the creative agencies in the world. It is an agreement with a single group who, though large, represent but a fraction of the potential scientific creative ability of the world. Since no one can foretell where controlling discoveries of a patent character will arise, either among men or as byproduct results of work undertaken in far removed fields, I think it would be rash to assume that during the next 22½ years we could place reliance on even a major number of controlling patentable inventions originating in the General Electric et al group.

What the suggested agreement proposes to do is to leave us merely with nonexclusive patent rights to our own work for a period of 22½ years. Since in addition the field of our activity is practically narrowly circumscribed in character, as compared with that of the General Electric group, even though the individual units of our business are large, we will have little or no incentive to expend time, money, or creative thought on anything which at its inception is not clearly in the field of our current business.

Experience has already proven conclusively that research undertaken in one field may turn out to have a byproduct value in another field which is even greater than the direct value within the field in which the research was undertaken. Many of our own large values in the telephone business are directly the result of

Digitized by Google

research work undertaken for an entirely different purpose and without realization of its direct application to the telephone business. In such cases the work would never have been started if our sole criterion was its prospective value in our going business.

The far-reaching effect of the proposed agreement on the character and scope of our research and development work is apparent. Viewed both from the standpoint of the research worker in our laboratories and from the standpoint of those responsible for the expenditures incurred by the laboratories, the inevitable result would be a narrowing of the field of activity and failure to undertake anything which at the outset is not clearly directed to the field of our current business. From the standpoint of the man who has a brilliant idea which in its first nebulous form seems to be applicable outside our business, there will be little or no urge to go ahead in the face of a situation where he knows that the results of his work have been sold in advance outside of the Bell System. From the standpoint of management there will likewise be no incentive, but quite the reverse, to urging him on and appropriating money for his investigations.

Under the 1926 agreement we have already begun to see the working of this process and the greatest stimulating effect imaginable on the creative group followed the knowledge that by serving notice of cancellation the first steps in removing the hampering restrictions of that agreement were being taken.

I am certain that if the proposed agreement were actually put in effect for 22½ years the character and scope of our research and development activity would follow the course I have indicated. It might always be a large affair within narrow limits but in the main its results would be of small value except in the slow evolution of a going business which was dependent on the outside world for those outstanding ideas which alone mark great progress. Both relatively and actually our research and development organization would diminish in stature and that of General Electric et al. would increase because of the very much wider scope and degree of freedom of field which the agreement assigns to them.

It is not alone, however, in its reaction on our creative organization that the proposed agreement sets up a situation inimical to our interests and which may at any time be fraught with great danger. Even if there were no effect of curtailment on our research and development activities, a situation which left us for a long period of time with nothing but nonexclusive rights under our own patents would deprive us of a very powerful tool for safeguarding our interests, whatever they might be, against the command of inventions arising outside the General Electric et al. group. Nonexclusive rights under patents, even though assignable, may be of very little or no value when it comes to negotiating for the acquisition of rights under patents which are of great moment to an industry.

While it is obvious that the basic inventions which control a large new field are not made very often, one can never tell where or when they will crop up. The tremendous growth in both fundamental and industrial research in recent years has unquestionably increased the probability of such inventions, with their covering patents, arising. When such patents do turn up, possession of a strong and unmortgaged patent position on the part of an industry needing rights is frequently the most powerful and sometimes the only available weapon for securing those rights. Ability to stop the owner of a fundamental and controlling patent from realizing the full fruits of his patent by the ownership of necessary secondary patents may easily put one in position to trade where money alone might be of little value.

We have already had vivid illustration of this in connection with the 1920 agreement, where ownership of what we thought to be fundamental and controlling patents in the hands of a group which were not willing to sell for money would have seriously threatened our business had it not been for our own free patent position. Had we at that time possessed only nonexclusive rights with substantially equal rights in the hands of others, there is little doubt but that we would have had to pay an enormous sum for the right to use in the Bell System the General Electric patents which they and we at the time thought might hold the key to our development.

A similar situation inimical to our interests may easily arise in the future if the proposed agreement is executed.

CONCLUSION

For the several reasons discussed above I am firmly of the opinion that a long-term agreement of the character now being discussed is not in our best interests and should not be entered into, unless the best alternative open to us is still so dreadful as to make this agreement, which will be binding on the next generation, clearly the only way out.

Digitized by Google

If it can be done and if the movement set on foot by our notice of cancellation of the 1926 agreement can be carried through, and we ultimately be restored to the full command of the fruits of our own work, I would have no fear whatever of treating any patent situation which might develop on its individual and specific merits. It is conceivable of course that a situation might arise in which our own patent position would be of little value in the acquisition of rights. Such a situation is not, however, bettered by the execution of the proposed agreement.

In a word, it seems to me we should in matters of this kind do everything possible to maintain the fundamentals of a situation which will develop the maximum creative incentive on our part and assure us the maximum value, in whatever way we choose to use that value, of the patent results of our work. To face the future with one arm palsied and the other arm deprived of a large part of its muscular force seems to me a highly dangerous situation for any industry.

F. B. JEWETT.

AS

Copies to Mr. Gifford
Mr. Folk
Mr. Carter
Mr. Page
Mr. Gherardi

EXHIBIT No. 144

[Handwritten:] Mr. Webb sent copies for other Directors.

Copy to: Mr. Alfred P. Sloan, Jr., General Motors Corp., New York City.
Mr. Donaldson Brown, General Motors Corp., New York City.

DECEMBER 15, 1934.

Mr. E. W. WEBB,
President, Ethyl Gasoline Corporation, 135 E. 42nd Street, New York City.

DEAR MR. WEBB: I learned through our Organic Chemicals Division today that the Ethyl Gasoline Corporation has in mind forming a German company with the I. G. to manufacture Ethyl lead in that country.

I have just had two weeks in Washington, no inconsiderable part of which was devoted to criticising the interchanging with foreign companies of chemical knowledge which might have a military value. Such giving of information by an industrial company might have the gravest repercussions on it. The Ethyl Gasoline Corporation would be no exception, in fact, would probably be singled out for special attack because of the ownership of its stock.

It would seem, on the face of it, that the quantity of Ethyl lead used for commercial purposes in Germany would be too small to go after. It has been claimed that Germany is secretly arming. Ethyl lead would doubtless be a valuable aid to military aeroplanes.

I am writing you this to say that in my opinion under no conditions should you or the Board of Directors of the Ethyl Gasoline Corporation disclose any secrets or "know how" in connection with the manufacture of tetraethyl lead to Germany.

I am informed that you will be advised through the Dyestuffs Division of the necessity of disclosing the information which you have received from Germany to appropriate War Department officials.

Yours very truly,

EXHIBIT No. 145

JANUARY 12, 1935.

CHIEF OF ARMY AIR CORPS,
Washington, D. C.

DEAR SIR: Complying with the suggestion made at my interview with General Westover and Major Howard on the 5th instant, I beg to submit herewith a statement of facts relative to the erection and operation of a plant for the production of Ethyl fluid in Germany.

Obviously from the facts presented we are faced with the necessity of building a plant in Germany or licensing somebody there to do so, and much more speedily than we originally anticipated because of the recent action taken by the Italian Government in according to an Italian company the right to engage in the manufacture of antidetonants, including Ethyl fluid, in Italy (please see pp. 2–3, Statement of Facts).

Digitized by Google

Ethyl fluid has been manufactured for about 12 years on an ever-increasing commercial scale, and it could be successfully produced by any experienced chemical organization here or abroad from the disclosures in the patents themselves and the literature on the subject.

There is no technical data of military importance known to us which would be involved in the building of such a plant that has not already received wide publicity, or is of common knowledge in the aviation field. Certainly nothing would be lost or suffered by our Government in our going ahead, but conversely it is reasonable to expect that certain definite advantages will accrue to it by our doing so.

We would be pleased to provide against future eventualities by agreeing that we shall not prematurely pass along to the proposed German company—or under any other contract we may make for the foreign manufacture of tetraethyl lead—any technical data of military importance, and will insert a protective clause covering this point in such contract. The following is the clause we have in mind:

"Anything in this agreement to the contrary notwithstanding, neither party shall be obligated to disclose to the joint company any new technical information relating to the manufacture, composition, or use of antiknock compounds, which information is of military value, without the approval of the appropriate government authority of that party."

Your approval of the form of this clause or any suggested changes or modifications of it would be appreciated.

If we have failed to present adequate facts for your information in respect to this matter, kindly advice us and we will be pleased to furnish any additional data you may request if within our power to do so.

Very truly yours,

E. W. WEBB, *President.*

STATEMENT OF FACTS

We control certain basic patents for the manufacture of tetraethyl lead and Ethyl fluid in the United States and a number of foreign countries. To date the manufacture of these products under license under our patents has been carried on in the United States only. Since 1924 these products have been manufactured solely by the E. I. du Pont de Nemours & Company and ourselves, excepting for a relatively small amount. The expiration dates of the patents vary in the different countries. For instance:

Argentina	July 12, 1934 (Expired)
France	March 19, 1939
Italy	March 20, 1939
England	April 13, 1939
Australia	April 13, 1939
Japan	May 5, 1940
Norway	March 17, 1941
Sweden	March 19, 1941
Germany	March 25, 1942

We are advised that the E. I. du Pont de Nemours & Company has several so-called "improvement" patents for the manufacture of tetraethyl lead (but not Ethyl fluid) in Germany, which expire subsequent to ours.

The patents for the manufacture of these products owned or controlled by ourselves and the du Pont Company have not been worked in Germany and under the German law that Government—if it appears conducive to the public interest—has the right to grant a license to anybody to manufacture them in Germany if the patentee fails to do so and refuses to grant a license on reasonable terms for manufacture in Germany.

About two months ago we received a proposal from the I. G. Farbenindustrie A. G. (hereafter referred to as I. G.) in Germany to purchase on a cash or license basis our entire rights in that country. At the time this proposal was made we were advised the German Government for reasons of economic self-sufficiency is directly and indirectly subsidizing and supporting the production of 1,100,000 tons per annum of gasoline from coal in Germany. This production will be in large part owned by, and in its entirety supervised by, I. G., the inventor of the oil-from-coal process. The production would normally average about 57 to 60 octane number. The market requirement there is for a gasoline of 64 to 74 octane. In order to convert 1,100,000 tons of gasoline from coal to the higher octane numbers it must be subjected to an additional manufacturing process, thereby materially increasing the cost and reducing the yield by converting part

Digitized by Google

of the gasoline into gas. This same improvement in octane number can be accomplished by the addition of a relatively small amount of lead, at a low cost and at no sacrifice of yield of the more expensive gasoline from coal.

The German consumption of gasoline is about two and a half per cent of the total consumption of the world, and if all the internal combustion motors in Germany were to use a motor fuel containing Ethyl fluid same could be supplied, in our opinion, by a plant located in Germany consisting of not more than five or six autoclaves of the size now being used in this country. Our supplying plants have sixty-four autoclaves, and with such knowledge as the I. G. undoubtedly have they could construct and operate a plant to take care of all of their requirements in not exceeding six months, and in an emergency in very appreciably less time.

We are advised and believe that the primary purpose behind the proposal is the use of Ethyl fluid in the government-subsidized motor fuel produced from coal, above referred to. If the object of the Germans was to place themselves in position to have Ethyl fluid available for use in aviation in the event of war, they could easily follow the course of increasing their present regular purchases from us (which amount to about forty tons per annum) and stocking up enough Ethyl fluid to last well beyond the period required to build a plant to meet such requirements in the event of such contingency.

Therefore, when the proposal came to us from I. G. to sell or license our entire Ethyl position in Germany we reviewed the facts above presented and could not escape the conclusion that we must either manufacture in Germany or grant a license on reasonable terms for someone to do so—failing which, the German Government would grant a license or licenses to sombebody to manufacture there. Having reached this conclusion, we countered the proposal of the I. G. by stating that we would be agreeable to the formation of a company in Germany which would build and operate an Ethyl fluid plant and the capital requirements of which would be supplied by I. G. and ourselves in equal amount. The I. G. accepted this proposal in principle.

Ethyl fluid has been manufactured in our behalf and that of our predecessor the General Motors Chemical Company, and used in automobiles in the United States since February 1, 1923, and in a number of foreign countries for several years. It has been used as an antiknock agent in some aircraft engines during the past eleven years, and for the past five years to a substantial extent. Last year we made shipments of Ethyl fluid for aviation use to twenty-four foreign countries and it was the peak year in its consumption for aviation here and abroad. Although its enlarged use in aircraft has been a source of great satisfaction to us, nevertheless the total consumption for that purpose amounted to only two percent of its total consumption for automotive use. There can be, we think, no question but that our main interest in the steps necessary to protect our patents abroad lies in the automotive rather than in the aviation field.

Since the appearance of Ethyl fluid as an antiknock compound it has received a large amount of publicity, some of it in the general press but more particularly in automotive, aircraft, and scientific journals here and abroad. Although the manufacture of Ethyl fluid entails considerable skill and is fraught with certain health hazards unless properly controlled, nevertheless there is no question in our mind but that any experienced chemical organization, here or abroad, could successfully manufacture from the disclosures that have already been made through the patent offices and in the literature, even if we did not directly transmit to such company any of the knowledge gained by the du Pont Company and ourselves through the years of manufacture. Doubtless for a period of time without the benefit of the experience of the du Pont Company and ourselves it would cost some other company more to manufacture it than with such knowledge. The ingredients that go into Ethyl fluid have been published a number of times over a period of years and it is also susceptible to analysis to the point of minute accuracy.

Although our Italian manufacturing patents do not expire until March 20, 1939, we were advised by our London office on Wednesday morning of this week that they had been informed only the day before of a decree that had been issued by the Italian Government dated December 28, 1934, which reads as follows:

"In view of the report presented by the Industrial Federation it is thought to accord to the Societa Nazionale Chimica, with headquarters in Milan, a new plant for the manufacture of anti-detonants for combustion motors (bromide of ethylene and tetraethyl lead). This industry was formerly subject to manufacture in foreign countries to the disadvantage of the Nation. The mixtures have furthermore not been put into actual practice. The Societa Nazionale Chimica will principally use ingredients of a national nature. The production will be absorbed principally by the Ministry of Aviation and in a large measure by motorists."

Digitized by Google

This decree has been issued regardless of the fact that we have not been requested by the Italian Government to manufacture in Italy or to issue a license to any concern to manufacture there. The information came to our organization this week with no previous intimation that such action was in contemplation. Undoubtedly this action was taken because of the fiscal situation as to imports, and this situation has become so acute in certain other countries as to disrupt the free flow of exchange and interfere with imports This is especially true in Germany and the net effect there will indoubtedly be the granting of licenses by the German Government providing for the internal manufacture of Ethyl fluid unless we promptly proceed with the conclusion of the contract with I. G.

After reviewing the situation with as much thought and care as we have been able to give to the subject, we feel sure that it will be to the interest of our Government as well as ourselves to have our company participate in the construction and operation of a plant in Germany or any other foreign country, rather than to have such plants built and operated exclusively by the nationals of any foreign country.

There is, furthermore, an equally, if not more, important business aspect to the German situation. We are owned by the Standard Oil Company (New Jersey) and General Motors Corporation in equal shares. General Motors has important investments in Germany, producing there in excess of fifty percent of the motor cars. Standard Oil Company (New Jersey) has large investments in all phases of the petroleum business in Germany and sells more than thirty percent of the motor fuel in that country (including fifty percent of the gasoline produced from coal in Germany by I. G.). We feel that in the interest of international trade and the effort to build up goodwill as well as for the reasons specifically mentioned here, that it would be extremely unfortunate for all concerned if we do not proceed to carry out the agreement with I. G. for the joint manufacture of tetraethyl lead and Ethyl fluid in Germany under our patents and those of the du Pont Company. A refusal or undue delay on our part in going ahead with the building of the plant would not only place Germany in a position where it could lawfully proceed without our participation, but might bring on some serious reprisal measures.

Respectfully submitted,

ETHYL GASOLINE CORPORATION,
By E. W. WEBB, *President.*

NEW YORK, N. Y., *January 12, 1935.*

EXHIBIT No. 146

E. I. DU PONT DE NEMOURS & COMPANY, INC.,
ORGANIC CHEMICAL DEPARTMENT,
July 11, 1935.

MR. J. K. JENNEY,
Asst. Director, Foreign Relations Department.

TETRAETHYL LEAD—ENGLAND. RE YOUR LETTER JULY 8TH

In accordance with my telephone conversation with Mr. Swint this morning, I think we should tell I. C. I. that the technical and engineering information which we are giving I. G. in connection with Tetraethyl Lead is being given them entirely at the request of the Ethyl Gasoline Corporation. As they no doubt know, Ethyl Gas and I. G. set up some arrangements whereby they are going to participate jointly in the manufacture and sale of Ethyl Lead in Germany and we are turning over our information to Ethyl Gas which they in turn can submit to I. G. as part of the bargain in connection with this joint enterprise. Under these circumstances there are no "terms * * * agreed upon by du Pont with respect to the I. G. Farbenindustrie for Germany."

Presumably if Ethyl Gas should make some arrangements with I. C. I. in connection with the manufacture of Tetraethyl Lead in England, they would at the same time arrange to have us furnish I. C. I. with the necessary manufacturing and technical information in connection with that manufacture.

E. G. ROBINSON,
General Manager.

Digitized by Google

EXHIBIT No. 147

HEADS OF AGREEMENT RELATING TO THE MANUFACTURE AND SALE OF ETHYL FLUID IN GERMANY

(1) Ammoniakwerk Merseburg G. m. b. H. (a subsidiary of I. G. Farbenindustrie Aktiengesellschaft) hereafter called "Leuna" and Ethyl Gasoline Corporation hereafter called "Ethyl Gasoline" a Delaware corporation (owned jointly by General Motors and Standard Oil Co. (N. J.)), shall cause to be organized a German corporation known as Ethyl G. m. b. H. (or A. G.) hereafter called "Ethyl". This company shall both manufacture and market Ethyl Fluid. In principle it is agreed that the parties will take the stock of Ethyl equally but it is understood that actually Ethyl Gasoline's share will be taken in equal parts by D. A. P. G. and Opel and paid for by these companies. Neither party shall thereafter dispose of any of its stock except to the other, or except to a member of its own corporate family, or except as provided in paragraph 4. The corporate family of Ethyl Gasoline shall include all subsidiaries of General Motors and of Standard Oil Co. (N. J.) as well as direct subsidiaries of Ethyl Gasoline. The corporate family of Leuna shall include all subsidiaries of I. G. In all cases "subsidiary" means more than 50% of the stock (or other language to the same effect).

(2) (*a*) Ethyl will obtain from Ethyl Gasoline an exclusive license for Germany under all the present and future patents controlled by Ethyl Gasoline relating to the manufacture and use of the Ethyl and Q-brands of anti-knock compounds for motor fuels and the present patents of Dupont for improvements in the manufacture of tetra-ethyl-lead.

Ethyl Gasoline will also give to Ethyl its present and future technical information and experience relating to the same products and the technical information and experience to date of Dupont in the manufacture of tetra-ethyl-lead.

(*b*) Leuna will grant to Ethyl an exclusive license under its present and future German patents relating to the same products and its present and future technical experience and information relating to the same products.

(*c*) Leuna will also give Ethyl Gasoline through Ethyl the exclusive right outside of Germany to all of Leuna's (I. G.'s) patents and technical experience and information relating to the same products provided that Ethyl Gasoline may not grant licenses to nor give technical information and experience to anyone who does not transmit to Ethyl through Ethyl Gasoline an exclusive right for Germany in the same field.

The term of the obligation covered by this par. (*c*) shall be contemporaneous with the term of the like agreements between Standard Oil Co. (N. J.) and General Motors and Ethyl Gasoline.

(*d*) With the exception of the rights obtained under paragraph (*c*) of this Section 2, Ethyl will grant to Ethyl Gasoline the exclusive royalty free rights for the world outside of Germany in respect of its future patents, technical information and experience relating to the products covered by this agreement. No time limit shall be placed on this obligation.

(*e*) Neither party shall be obligated to disclose to Ethyl nor shall Ethyl be obligated to disclose to Ethyl Gasoline any new technical information relating to the manufacture, composition or use of anti-knock compounds until such time as proper military authorities have passed upon the military value of such data and given approval for such release to foreign nations, and even if such approval is obtained there shall be no obligation for any party to make a disclosure to any of the others in respect to any anti-knock compound other than Ethyl Fluid. This clause in appropriate form shall be carried through into any agreement which is made by an I. G. subsidiary for carrying on operations for the account of Ethyl.

(*f*) Ethyl shall pay to Ethyl Gasoline after having obtained permission from the German Government as a royalty for all licenses and experience $25,000.—p. a. in U. S. currency. Such payments shall commence with the first sale of Ethyl Fluid made by Ethyl and shall continue until the close of the year in which the Ethyl Fluid patent expires. (Patent expires Dec. 11, 1941).

(*g*) It is understood that under the foregoing arrangement no licenses are to be exchanged by the parties in respect of the manufacture of raw materials used in the manufacture of tetra-ethyl-lead or for the manufacture of other components of Ethyl Fluid.

Digitized by Google

(*h*) It is understood, that the obligation of Ethyl Gasoline in respect of the granting of licenses above referred to shall become effective only as required by actual progress of the parties under the agreement.

(3) Ethyl shall contract with Leuna to erect and operate for the account of Ethyl on land owned or leased by Ethyl, at a location satisfactory to Leuna, a plant for the manufacture of tetra-ethyl-lead and for the compounding of same to produce Ethyl Fluid. The capacity of the plant shall be initially about 800 to 1,000 kilos tetra-ethyl-lead per 8 hour day. All funds for the erection and for operation of such plant shall be supplied by Ethyl. Leuna to be reimbursed for all of its expenses, direct and indirect, incurred in the erection and operation of the plant. It is recognized that in an arrangement of the sort proposed in this Section 3 no difficulties will arise with regard to direct expenses; the question of indirect expenses, however, is always difficult of solution; it is therefore suggested that to cover all indirect expenses Leuna shall receive a fee fixed as . . . . . Pfg. per kilo of tetra-ethyl-lead.

Leuna shall have the preference in the supply of such raw materials as are manufactured by I. G. or covered by manufacturing arrangements to which it is a party for use in the manufacture of tetra-ethyl-lead, and the policy of Ethyl shall also be to purchase other materials used in Ethyl Fluid from Leuna, if I. G. is engaged in the manufacture thereof, but in neither case shall this be construed to prevent Ethyl from taking all steps necessary to insure that it is obtaining supplies at the lowest fair price, and where—as in the case of Ethylene dibromide—this requires that Ethyl purchase from other producers to keep such producers in operation, Ethyl will do so.

(4) It is the desire and intention of Ethyl Gasoline to offer a ½ interest in Ethyl to the users of Ethyl Fluid in Germany.

To facilitate this Leuna agrees that on request of Ethyl Gasoline Leuna will authorize Ethyl Gasoline to sell to the nominee or nominees of Ethyl Gasoline for the account of Leuna at not less than cost ½ of its shares in Ethyl provided that—

(a) DAPG and Opel shall each sell simultaneously at the same price ½ of the shares owned by them to the same nominee or nominees,

(*b*) each such nominee shall be engaged in the actual manufacture or sale of gasoline containing Ethyl Fluid in Germany,

(*c*) the remaining share holdings of Leuna and DAPG and Opel shall be pooled for all voting purposes.

Without committing itself further than above, Ethyl Gasoline declares that its plan is to organize a holding company to acquire the ½ interest in Ethyl to be sold to the users of Ethyl Fluid. Shares in this holding company will be offered to all major companies engaged in the manufacture or sale of gasoline containing Ethyl Fluid in Germany in proportions based primarily on their use of Ethyl Fluid.

(5) Means are to be found to prevent any party from competing with Ethyl as long as he remains associated with the others in Ethyl. A suggestion is that he should, if he desires to compete, offer to his associates in Ethyl the option to buy him out or to sell out to them.

EXHIBIT No. 148

HEADS OF AGREEMENT RELATING TO THE MANUFACTURE AND SALE OF ETHYL FLUID IN ITALY ETC.

1. There shall be organized an Italian company under the name "Montecatini Derivati di Piombo" with a real capital of approximately Lire 2,500,000, provided in equal amounts by Montecatini and a new Italian company called "Ethyl S. A. I." hereafter referred to. The shares of Montecatini Derivati di Piombo shall be taken equally by Ethyl S. A. I. and Montecatini, and each party shall agree not to sell, transfer, or otherwise dispose of any of the shares so acquired without the consent in writing of the other.

Montecatini Derivati di Piombo shall erect, under plans and specifications provided by Ethyl S. A. I., a plant for the manufacture of Ethyl brand antiknock compound. This plant shall have an initial production capacity of approximately 100 tons per annum of tetraethyl lead (being approximately 150 tons of Ethyl Fluid). Montecatini Derivati di Piombo shall manufacture tetraethyl lead, and shall also manufacture the ethyl chloride used in the manufacture of tetraethyl lead and may also convert bromine to ethylene di-bromide for use in Ethyl Fluid. It shall purchase the other materials used in the manufacture of tetraethyl lead and Ethyl Fluid wherever available at the lowest cost, preference being given always to Italian sources of supply.

Digitized by Google

2. (*a*) Montecatini Derivati di Piombo will obtain from the Ethyl Gasoline Corporation an exclusive license for Italy and the Italian Colonies under all of the present and future patents controlled by Ethyl Gasoline Corporation relating to the manufacture and composition of Ethyl brand anti-knock compound, and the present patents of the Dupont Company for improvements in the manufacture of tetraethyl lead. The Ethyl Gasoline Corporation will also give to Montecatini Derivati di Piombo its present and future technical experience and information relating to the same products. The foregoing obligations shall continue so long as Ethyl S. A. I. remains a shareholder of Montecatini Derivati di Piombo, or so long as Ethyl Gasoline Corporation shall remain in the business of manufacturing and/or selling the product in question, whichever is the greater in point of time. Further Ethyl Gasoline Corporation will give to Montecatini Derivati di Piombo the technical information and experience to date (but not for the future) of Dupont in the manufacture of tetraethyl lead. If Dupont wishes to obtain the benefit of any future improvements of Montecatini Derivati di Piombo relating to the manufacture of tetraethyl lead, it must agree to pass on to Montecatini Derivati di Piombo its own future improvements relating to the manufacture of tetraethyl lead.

(*b*) Montecatini will grant to Montecatini Derivati di Piombo an exclusive license under its present and future Italian patents (including patents granted by Italian Colonies) relating to the same products, and its present and future technical experience and information relating to the same products.

(*c*) Montecatini will also grant to Ethyl Gasoline Corporation through Montecatini Derivati di Piombo the exclusive right outside of Italy and the Italian Colonies to all of Montecatini's patents and technical experience and information relating to the same products, provided that Ethyl Gasoline Corporation may not grant licenses under such patents nor give such technical information or experience to anyone who does not transmit to Montecatini Derivati di Piombo through Ethyl Gasoline Corporation an exclusive right for Italy and the Italian Colonies in the same field. The term of the obligation covered by this paragraph (*c*) shall be contemporaneous with the term of the like agreements between Standard Oil Company (New Jersey) and General Motors Corporation and Ethyl Gasoline Corporation.

(*d*) In addition to the rights granted under paragraph (*c*) above, Montecatini Derivati di Piombo will grant to Ethyl Gasoline Corporation the exclusive rights for the world outside of Italy and the Italian Colonies in respect of its future patents, technical information, and experience, relating to the products covered by this agreement. This obligation shall continue so long as Ethyl S. A. I. remains a shareholder of Montecatini Derivati di Piombo, or so long as Ethyl Gasoline Corporation shall remain in the business of manufacturing and/or selling the product in question, whichever is the greater in point of time.

(*e*) Neither party shall be obligated to disclose to Montecatini Derivati di Piombo, nor shall the latter be obligated to disclose to Ethyl Gasoline Corporation or Ethyl S. A. I., any new technical information relating to the manufacture, composition, or use of antiknock compounds until such time as proper military authorities have passed upon the military value of such data and given approval for such release, and even if such approval be so obtained, there shall be no obligation for any party to make a disclosure to any of the others in respect of any antiknock compound other than tetraethyl lead and Ethyl Fluid.

(*f*) Montecatini Derivati di Piombo shall pay to Ethyl Gasoline Corporation, after having obtained permission from the Italian Government to make remittances, the nominal sum of $1,000 per annum in United States currency. This sum shall be payable for experience and technical assistance given by Ethyl Gasoline Corporation to Montecatini Derivati di Piombo. This sum shall be payable for the first five years of the term of this contract and no longer. With the exception of this payment, no other shall be payable to any party for any licenses granted under this agreement.

(*g*) It is understood that under the foregoing arrangement, no licenses are to be exchanged by the parties in respect of the manufacture of raw materials used in the manufacture of tetraethyl lead or for the manufacture of other components of Ethyl Fluid.

3. (*a*) Montecatini Derivati di Piombo shall be obligated to offer to the Ethyl Export Corporation (a subsidiary of the Ethyl Gasoline Corporation) at the export price specified in paragraph 3 (*b*) hereof the difference between one hundred (100) tons Tetraethyl Lead and the requirements of Ethyl S. A. I. to satisfy the Italian market inclusive of the Italian Colonies plus the requirements for military purposes referred to in paragraph 4 hereof. In the event the Ethyl Export Corporation should decline to purchase any part of the quantity thus required to

Digitized by Google

be offered, Montecatini Derivati di Piombo shall have the right to export such part from Italy and sell the same in any country in which the Ethyl Export Corporation is making or entitled to make sales of similar products.

It is further understood and agreed that if and when the internal consumption of Italy justifies larger capacity than 100 tons, Ethyl S. A. I. will agree with Montecatini to enlarge the capacity of Montecatini Derivati di Piombo as required rather than raise any question of importing the excess amount.

Except as provided above, Montecatini Derivati di Piombo shall not export Ethyl Fluid or tetraethyl lead in any form.

(*b*) Ethyl S. A. I. may if it so desires erect facilities for handling and storing, packing and shipping Ethyl Fluid at a location conveniently near to the plant of Montecatini Derivati di Piombo. Ethyl S. A. I. shall accept delivery of Ethyl Fluid manufactured and packed according to specifications fixed by it and in containers supplied by Ethyl S. A. I. in approximately even quantities throughout the year, either at its own plant above-mentioned or delivered to transportation companies for direct shipment to customers as Ethyl S. A. I. may direct.

The price of deliveries for domestic and export shall be as follows:

For domestic deliveries Ethyl S. A. I. shall fix the price paid by and the terms of sale to consumers in Italy from time to time at its discretion. The principle shall be that the price shall be the same for all consumers, and shall be the same price paid by consumers in other countries, except to the extent that higher costs or taxes or other conditions peculiar to the Italian market may require a higher price. Ethyl S. A. I. shall return to Montecatini Derivati di Piombo the proceeds from the sales of all Ethyl Fluid delivered to it on the price basis above fixed, after deducting the total expenses the Ethyl S. A. I. shall justify it has incurred relating to medical and technical control and to any other requirements for sale and propaganda of the product, which total expenses shall not exceed in any one year the sum of Lire 120,000 and a commission of 7% of the sales price on all sales made within Italy and the Italian Colonies.

It is understood and agreed that this figure of Lire 120,000 shall be either increased or decreased annually, proportionate with increases or decreases respectively in the average between the cost of the manufacture of Ethyl Fluid and the sales price thereof taken over the year in question. The standard by which it shall be determined whether or not such figure of Lire 120,000 shall be increased or decreased shall be the average between the manufacturing cost and the sales price for the first full year of operation under this agreement.

It is understood that in addition to the price of Ethyl Fluid, Ethyl S. A. I. may charge the customer at cost for packages and similar items; such cost items incidental to deliveries are not to be regarded as part of the sales price for any purpose.

For export, the price shall be the average internal price less freight, taxes and duties realized in the various foreign markets (i. e. markets outside the United States of America and Canada and Italy and the Italian Colonies) supplied through Ethyl Export Corporation by imports, less a commission of 10% of the sales price.

It is noted that Ethyl Export Corporation does not handle the Canadian business, which is handled directly by imports through Ethyl Gasoline Corporation in the United States.

4. The right of selling and delivering directly to the Italian Government supplies of products covered by this agreement and which supplies are to be used solely for military purposes, shall be reserved exclusively to Montecatini, to which company Montecatini Derivati di Piombo shall pay on the proceeds of such sales a commission equal to 7% of the sales price. With the exception of the sales and deliveries to the Italian Government for military purposes which are reserved to Montecatini by this paragraph, all other sales of the production of Montecatini Derivati di Piombo shall be executed through Ethyl S. A. I.

5. Neither Montecatini nor Ethyl Gasoline Corporation shall compete in any way with Montecatini Derivati di Piombo or Ethyl S. A. I. in the manufacture or sale of Ethyl Fluid or tetraethyl lead in Italy and the Italian Colonies, and Montecatini shall not engage directly or indirectly in the manufacture or sale of tetraethyl lead or Ethyl Fluid outside of Italy, except through Montecatini Derivati di Piombo as herein provided.

Digitized by Google

EXHIBIT No. 149

VERNON-BENSHOFF COMPANY,
Pittsburgh, Pa., March 15, 1940.

RÖHM & HAAS COMPANY,
222 W. Washington Square,
Philadelphia, Pennsylvania.
Attention: Dr. D. S. Frederick.

DEAR DR. FREDERICK: Our discussion of the Pure Food and Drug law and pulling the acrylic denture under it leads me to wonder if the manufacturers of the commercial molding powders might not add an ingredient which would not effect the molding properties, but which would disqualify it under the act. Apparently a slight trace would suffice. Naturally it would be omitted from the strictly denture powder.

Recently I asked Dr. Johnson to suggest an addition which might interfere with distillation of monomer or retard polymerization. He could not think of anything that wouldn't spoil the molding properties or clarity of the powders. But there the quantity needed to accomplish the result was the handicap.

Under the very finicky regulations of the above act however, it may be the slightest trace of the right agent, too little to constitute harm to molding (or health either as a matter of fact) would suffice to have bootleg products in bad.

A millionth of one percent of arsenic or lead might cause them to confiscate every bootleg unit in the country. There ought to be a trace of something that would make them rear up.

Very truly yours,

VERNON-BENSHOFF COMPANY,
L. B. VERNON.

LBV NS

EXHIBIT No. 150

MARCH 21, 1940.

Mr. L. B. VERNON,
Vernon-Benshoff Company,
P. O. Box 1587, Pittsburgh, Pa.

DEAR MR. VERNON: In reference to your letter of March 15th, we shall be glad to investigate whether denture materials come under the Pure Food and Drug Act. We agree with you that if we could put some ingredient in our commercial molding material which would disqualify it under the Pure Food and Drug Act, this would be a very fine method of controlling the bootleg situation. We shall take this matter up with our development department and advise you whether any such material could be used.

Very truly yours,

RÖHM & HAAS COMPANY,
D. S. FREDERICK.

EXHIBIT No. 151

E. I. DU PONT DE NEMOURS & COMPANY, INC.,
Wilmington, Delaware, June 26, 1940.

Confidential.
Dr. H. A. LUBS, Chemco. Dir.,
Chemical Division.

Minutes of conference on "Monastral" colors for paint and dye pigments in Wilmington, on June 18, 1940

Those present were: Dr. Gubelmann, Dr. Elley, Dr. Lubs, Mr. Tinker, Dr. Stallmann, Dr. Black, Dr. Chantler, Dr. Echlen, and the writer.

Mr. Protto was present during the closing minutes.

Dr. Gubelmann requested Dr. Black to read a copy of the latter's letter of June 18 in which was outlined the finishes in which "Monastral" colors are used, pigments being replaced, and the advantages and disadvantages of the phthalocyanines in comparison with other pigments.

The purpose of the conference was to organize the material to be discussed with representatives of G. A. F. on Monday, June 24. Three problems had been

Digitized by Google

presented G. A. F. to serve as a basis for the discussion: (1) Production of a lower priced pigment for the paint trade of such properties as to be unsuitable for textile printing, (2) elimination of bronzing, and (3) increasing the can stability of the pigment.

Dr. Gubelmann was of the opinion that only such points, on which experimental work had been done, should be discussed with G. A. F.

(*1*) *Pigments Unsuitable for Textile Printing.*

(*A*) *Mixtures with Other Pigments.*—Mixtures of phthalocyanine pigments with carbon black, indigo, iron blue and aluminum powder had been made at the Technical Laboratory. In general, the change in shade and the dulling effect were proportional to the amount of diluting pigment added. However, the effect of the addition of other pigments on the utility of the mixtures in textile printing was less than that predicted. Mr. Chantler was of the opinion that pigment mixtures unsuitable for textile printing would be very difficult to obtain.

(*B*) *Agents Injurious to Textile Printing.*—The suggestion was made that certain compounds that were white under ordinary conditions but that would be oxidized to give colored bodies when the prints are subjected to chlorine bleach, could be used. A few experiments had been made along this line using such compounds as Chlorestain N, dianisidine and DuPont Oxy Black Base. Complete data on this work are not available. Dr. Dahlen expressed the opinion that the addition of such compounds probably would cause as much or more damage to the paint trade as to textile printing.

Such substances as ground glass and carborundum were suggested for incorporation with the pigment. While these materials would undoubtedly scratch printing rolls, there is considerable doubt as to their effect in paints and lacquers.

(*2*) *Bronzing.*

Dr. Black stated that considerable evidence had been obtained that bronzing was caused by a pigment-air interface. Exposure of the pigment particles was due to film decomposition and not to pigment migration to the surface. The attack on this problem had been directed toward coating the pigment particles with substances more resistant to weathering than the paint film itself. The agents used and results obtained are tabulated below:

Agents	*Results*	
Silicates	Less bronzing	Too hard to grind
Casein	" "	" " " "
Glyptal Resins	" "	Very hard
Urea-Formaldehyde	No data	No data
Nylon	" "	Fairly soft
Rosin-Maleic Anhydride	" "	No data
Bedafin Type [1]	" "	" "

[1] I. C. I. reports less bronzing.

Dr. Gubelmann suggested that a noncrystalline copper phthalocyanine structure could be obtained by reacting tetra-amino-CPC with agents that would cause a large increase in the size of the molecule.

(*3*) *Can Stability.*

Copper phthalocyanine and metal-free phthalocyanine exhibit a marked loss in strength when ground in certain vehicles and stored for some length of time. This has been proved to be due to crystallization of the pigment from components of the vehicle. Specifically, aromatic type hydrocarbons seem to cause marked crystallization. The methods of attack on this problem and the results obtained are as follows:

A. Partial Chlorination of the CPC.—I. C. I. reported improvement in can stability and now produce a partially chlorinated brand known as "Monastral" Fast Blue LBS. Technical Laboratory tests have not confirmed this observation.

B. Coprecipitation of Various Metal Phthalocyanines.—Various metal phthalocyanines such as Al, Ni, Pb, Fe, and Co have been copasted with copper phthalocyanine. No improvement in can stability was observed.

C. Coating with Solvent Insoluble Materials.—All of the coated products produced for test as a nonbronzing pigment have been tested for crystallization from

Digitized by Google

boiling xylene. The latter test is somewhat rigorous but indicative of the behavior of the pigment when stored for some time. The results are tabulated below:

Agents	*Results*
Silicates	Very little crystallization
Glyptal resins	" " "
Urea-Formaldehyde	Marked "
Bedafin Type resin	Little "
Nylon	Very little "

D. Use of Other Solvents in Vehicle Formulation.—Oxygenated solvents and aliphatic hydrocarbons were shown to decrease the amount of crystallization of the CPC. However, the use of such solvents causes other effects in the paint, equally serious in nature.

The conclusions reached at the conference may be summarized as follows·

1. G. A. F. will be asked to exchange samples together with a synopsis of the method of preparation of all new developments pertaining to the above problems.
2. DuPont will disclose to G. A. F. such information on which experimental data have been obtained.

JACKSON LABORATORY,
MISCELLANEOUS DYES DIV.,
By S. R. DETRICK.

EXHIBIT No. 152

Date 6/28/40.

To: Mr. A. R. Chantler
From: H. A. Lubs.
[For Information.]

MEMORANDUM OF DISCUSSION BETWEEN REPRESENTATIVES OF GENERAL ANILINE WORKS AND DUPONT COMPANY

[Confidential]

Subject

1. A new type of copper phthalocyanine (CPC) for the paint and lacquer trade which would be unsuitable for application on textiles.
2. Elimination of bronzing of CPC blue and green.
3. Improvement of the can stability of CPC blue in paints.

The meeting was held in Dr. I. Gubelmann's office, June 24 at 11:00 A. M.

Present: Representatives of G. A. W.—Dr. Max, Mr. Bonnar, Mr. Henlein; DuPont—Dr. I. Gubelmann, Mr. A. R. Chantler, Dr. H. A. Lubs, Dr. C. K. Black, Mr. J. M. Tinker.

The importance of solving these problems was recognized, and it was agreed that both parties would work on promising ideas which resulted from this discussion. The three problems are closely related, and it is possible that the solution of one or two will automatically solve the third. It was agreed that a powder would be the preferable standard. After detailed discussion of various modes of attack, the following appeared to be outstanding:

1. (*a*) *Mixtures of CPC with Lakes.*—The most promising mode of attack appears to lie in the formulation of a mixture of CPC with a lake, especially a lake of CPC. Such a mixture should have fairly good fastness to light and yet be poor in wash fastness on textiles or incompatible with the usual textile printing lacquers. A wide variety of various alkaline earth and metal salts of sulfonated CPC containing 1, 2 or 3 sulfonic acid groups will have to be prepared and tested in varying amounts with dispersed CPC. Lead and titanium salts should be particularly studied. The use of inorganic pigments for admixture with CPC does not look as attractive. A resinated CPC will be tested on textiles since it is known to be satisfactory for surface coating compositions.

(*b*) *Use of Plasticizers.*—It was believed that plasticizers might be incorporated into CPC which should not hurt surface coating compositions but would decrease the crocking fastness when applied to textiles. Various high melting waxes, stearic or other high molecular weight acids will be tried.

Digitized by Google

(*c*) *Use of Driers.*—It appears possible that a limited amount of a drier might be incorporated into CPC which would make the textile print boardy, particularly at the temperature of the dry can and yet might not interfere with can stability and paint properties.

(*d*) *Deteriorate Cotton.*—Compounds might be incorporated into CPC which when applied to textiles and followed by bleaching or heating treatment might increase the deterioration of the cloth. Compounds such as chlorates or aliphatic halides which would produce hydrochloric acid were specific examples.

(*e*) *Color Forming Substances.*—Compounds which in themselves are normally colorless which would produce highly colored products when treated with bleach might be incorporated so as to make their use in textiles unsuitable.

(*f*) *Emulsion Breakers.*—Compounds might be added to CPC which would give poor emulsions when attempts were made to use them as textile printing. It might be possible to make them unsuitable for one type of emulsion, such as water-in-oil, but it may be difficult to make them also unsuitable for the oil-in-water type. The incorporation of a colloid, such as Bentonite, might make printing pastes thick.

(*g*) *Irritating Substances.*—It is known that certain resins and solvents are irritating to the skin, often causing dermatitis. It might be possible to formulate a CPC composition which will make textile materials irritating to the skin.

(*h*) *Incorporation of Grit.*—It seemed too dangerous to attempt to add gritty material to CPC since, although it would interfere with the use of the material for textiles, it would also offer serious disadvantages in grinding on application of surface coatings.

It was agreed that the mere dulling of the material would not be a satisfactory solution since dull shades are often used in the textile trade. Most of the above comments were based on work on blue, and many of the solutions would apply equally well to the green. In fact it is believed that there is a larger market for the sale of green than the blue.

2. *Elimination of Bronzing of CPC Blue and Green.*—We have been successful in eliminating or retarding bronzing by coating the CPC particle with a very hard insoluble resin. This has led to a material which is very difficult to grind and results in hard, horny material unsuitable for paint. G. A. W. have had some success in the use of high melting waxes in paint compositions and which apparently reduced bronzing. Both these methods of attack should be continued including attempting to coat the particle by means of special processes, such as the Harmon soft powder method or spray drying technique. Mixtures of CPC and indigo are fairly bright and should materially reduce bronzing, particularly if the indigo which does not bronze were coated on the CPC particle. Attempts will be made to prepare further samples along this line.

The use of ultra-violet light absorbing compounds is to be considered since we agree that bronzing is caused by the deterioration of the plastic film, which in turn is accelerated by ultra-violet light. Various compounds which are not highly colored but which fluoresce in daylight are suitable candidates.

Mr. Chantler will obtain samples of a nitro-cellulose composition which both parties will use for preliminary bronzing tests. When a promising lead is obtained, other vehicles will be studied.

3. *Improvement of the Can Stability of CPC Blue in Paints.*—We have considerable evidence that the poor can stability of CPC paints is due to crystal growth. The solvent has a marked effect, the aromatic hydrocarbons being the poorest. Oxygen-containing solvents and aliphatic hydrocarbons are more suitable. The results are not entirely consistent and it was brought out that traces of metals, such as copper, might catalyze the crystallization. It is known that mixtures of CPC and cadmium colors fade out in the can with a loss of blue. Traces of copper salt will be added to metal-free samples to check this point. It was also suggested that the solder in the can may be a promoter.

Dr. Max agreed to send a pound of crude urea process CPC, free of chlorine, which we shall make into a paint and study its crystal growth. We have had some evidence that the mixture of CPC and lever chlorinated CPC is more stable to can fading. It is possible that the chlorine-free product will have poorer can stability than the impure chlorine-containing mixture.

Both Mr. Chantler and Mr. Bonner will obtain samples of a clear lacquer suitable for textile application and half of the supply will be sent to the other party, so that we can study textile printing in the identical lacquer composition.

It was agreed that both parties make every effort to solve these problems as soon as possible since complete tests will require long periods of study before products can be adopted. We shall keep in close touch with each other on any promising

Digitized by Google

leads, so that no effort need be lost on less promising work. The next meeting will take place on Monday at 10:00 A. M., July 29, at the G. A. W. offices on the 7th floor at 435 Hudson Street, New York.

EXHIBIT No. 153

OCTOBER 20, 1943.

The Hon. HARLEY M. KILGORE,
Committee on Military Affairs, United States Senate, Washington, D. C.

MY DEAR SENATOR KILGORE: In his prepared statement before your committee on October 15, the Honorable Wendell Berge, Assistant Attorney General in charge of the Antitrust Division, Department of Justice, quoted excerpts from a confidential memorandum of March 29, 1935, dealing with the development of 100 octane aviation gasoline.

Possibly because he was unaware of the full correspondence, Mr. Berge overlooked calling to your attention that on December 27, 1935, General Oscar Westover, Chief of the U. S. Air Corps, advised us as follows:

> *"It has been decided that the military status of high anti-knock fuels shall be non-secret, as regards release of information, both in this country and abroad."*

Let us look at the full story. Mr. Berge cited the aforementioned excerpts to substantiate his thesis that our company—among others—had found itself "in a position where it must choose between the national interest on the one hand and its cartel obligations on the other." It seems to us unfortunate that Mr. Berge did not present the memorandum as a whole and the documented circumstances surrounding it. A photostat of Mr. Howard's memorandum in its entirety is attached hereto.

What Mr. Berge pictured as a "cartel obligation" was Standard's agreement to exchange information on the technical development of the hydrogenation process with I. G. Farbenindustrie. The Germans had originated this process themselves. When Standard bought an 80% interest in the process for the world outside of Germany in 1929 it wanted also to obtain the benefit of all the future German improvements. The way it got these improvements was through the exchange agreement.

Standard always received more technical information than it gave under this agreement, because Germany did a great deal more work on hydrogenation than all the rest of the world put together.

Our peacetime exchange of technical data was, therefore, a normal and proper incident to the purchase of a patented process and one which has brought almost unlimited benefits to the United States. But whatever name is applied to this contract, the simple fact remains that it was not the cause of the difficulties.

The whole point of the discussion in Mr. Howard's confidential memorandum to the heads of our company was simply that to do what the Army suggested—that is, *to keep secret* the development of 100-octane gasoline in this country—was an extremely difficult task. As Mr. Howard said, it "bristled with difficulties." This the Army later realized.

These difficulties become obvious when you realize that at that time, the following companies were entitled, *under contracts made with them*, to receive information regarding improvements and developments on the hydrogenation process by which we proposed to help the Air Corps develop its superior aviation fuel:—

Atlantic Refining Company,
Barnsdall Corporation,
Cities Service Company,
Continental Oil Company,
I. G. Farbenindustrie,
Imperial Chemical Industries of Great Britain,
Mid-Continent Petroleum Corporation,
Royal Dutch Shell,
Shell Union Oil Corporation,
Sinclair Refining Company,
Skelly Oil Company,
Socony-Vacuum Corporation,
Standard Oil Company of California,
Standard Oil Company (Indiana),
Standard Oil Company (Ohio),
Standard Oil Development Company,
The Pure Oil Company,
The Texas Company.

Digitized by Google

Mr. Berge has failed to report that in spite of such difficulties, *we did what the U. S. Army Corps wanted done.* He has apparently overlooked the fact that the Army Air Corps advised us on December 27, 1935

> *"It has been decided that the military status of high anti-knock fuels shall be non-secret, as regards release of information, both in this country and abroad."*

The question of the memorandum from which Mr. Berge quoted was raised before the Senate Committee on Patents on Wednesday, August 19, 1942. Since it was the purpose of your Committee to get at the whole facts of these matters, it seems to us unfortunate, also, that Mr. Berge ignored the discussion before that Committee on page 5100 of the Committee's published hearings.

Here are the facts in this matter:

1. During the week of March 18, 1935, the U. S. Army Air Corps told us informally that it would like us to bid on a proposal for a limited quantity of 100-octane aviation gasoline and that they would like to discuss with us the technical situation with regard to supplies and quality of improved aviation gasoline.

2. Mr. R. P. Russell, Vice President of the Standard Oil Development Company and the man in our organization best qualified, promptly spent two days in Washington discussing the matter.

3. Mr. Howard's memorandum of March 29th reported developments to that point. You will find in it no suggestion of any attempt on our part to find an alternative to doing our best to help the Army Air Corps to achieve its objectives. It simply points out the difficulties to be solved.

4. On April 19 again Mr. Howard called attention to the fact that our Development people could not see "how it is going to be possible as a practical matter to long withhold the information from the companies associated with us in the hydrogenation pool." He asked permission to explain the situation in detail to Army authorities and "make it clear that the difficulties in the way of attempting to maintain absolute secrecy concerning methods of production of this material seems to us too great." (Photostat of this letter is attached hereto.)

5. On June 28, 1935, the whole matter was laid out in a four-page letter from Mr. Guy Wellman, General Counsel of our company, to Major C. W. Howard, Aide to the Chief of the Army Air Corps, War Department. (Photostat of this letter is also attached hereto.)

6. On December 11, 1935, Mr. Howard wrote General Oscar Westover, Assistant Chief, Army Air Corps. (A photostat of this letter is also attached hereto.) As you will see, Mr. Howard asked General Westover specifically:

> (*a*) "Is there any reason why we should further postpone performance of our contractual obligations to pass on to our American associates in the Hydro Patents Company, to the International Hydrogenation Engineering & Chemical Company at The Hague, and the I. G. Farbenindustrie in Germany, the results of our development work on the production of high octane (95 or better) aviation gasoline by hydrogenation? * * * ".
>
> "(*b*) Is there any reason why we should refrain from contracting through our European affiliates for the supply of iso-octane in large quantities to French, German, and English air lines or governments? * * *"

7. On December 27, 1935, General Westover replied to Mr. Howard's letter. (A photostat of that reply is also attached hereto.) You will note the following statement in that letter:

> *"It has been decided that the military status of high anti-knock fuels shall be nonsecret, as regards release of information, both in this country and abroad."*

The record shows that, years before war broke out, the U. S. Army worked out, with the help of American industry, a program by which it was the first fighting force in the world to standardize on 100-octane gasoline, and it was the only fighting force so standardized when the European War broke out in 1939. The program was successful from the beginning, and was a real basis for the most important military superiority which the United States had over the other countries when war came.

We are very proud of the fact that the essential basis of this program was the cooperation given the Air Corps by our company, both in the original research work and in the initial commercial production. I know that you will appreciate our keen desire to see that this record remains unsmirched by misrepresentation or innuendo.

Digitized by Google

The record shows that, seven years before our country went to war, we were doing our best to help make our country strong in the event of war; that when questions of policy arose which involved foreign countries, we sought the advice of the Army or the State Department and followed their instructions. What else, Senator, would you have had us do?

I am writing this letter in the absence of Mr. Gallagher, who is out of town on an extended business trip. If you consider the request in order, we should like to have this letter and its enclosures made a part of the record of the Hearings of your Committee.

Sincerely yours,

R. T. HASLAM

RTH.HG

cc—The Honorable Wendell Berge, Assistant Attorney General, in charge of the Anti-Trust Division, Department of Justice, Washington, D. C.

[Confidential]

MEMO FOR MESSRS. TEAGLE AND FARISH

During the week of March 18th we received word informally that the Army Air Corps would like us to bid on a proposal they were just making for a limited quantity of 100 octane number aviation gasoline, and that they would also be glad of an opportunity to discuss with us, from a technical standpoint, the situation with regard to supplies and quality of improved aviation gasoline. We have always put ourselves entirely at the disposal of the fighting services in matters of this kind. Therefore, Mr. R. P. Russell, Vice-President of the Standard Oil Development Company, who is the best qualified man in our organization, spent two days in Washington discussing the whole question of present and probable future availability of improved aviation gasoline. The position, general program, and desires of the Army Air Corps in this matter were covered in full by Major C. W. Howard, who is Assistant to the Chief of Air Corps, and confirmed by General Foulois, Chief of the Air Corps. The technical and research situation in the oil industry in general and especially in our group of companies, and the present and probable future availability of supplies in the United States and foreign countries, was covered without reservations by Mr. Russell. The purport of these discussions was about as follows:

The Army Air Corps is proceeding at once on a limited program of procurement of 100-octane number fuel. The only known means of getting a satisfactory quality of such fuel at the present time is by blending with regular aviation gasoline 50% of iso-octane together with tetraethyl lead in normal amounts. Supplies of iso-octane are at the present time extremely limited. So far as we know the Shell Company and ourselves are the only present suppliers. Our supplies are inadequate for our own commercial needs and we have no desire to quote on Government business in the near future. Nevertheless Mr. Russell agreed to recommend doing everything possible to speed up production and enlarge the supply of iso-octane and to bid on the Air Corps contracts at the earliest practical moment. Mr. Russell has fulfilled this promise under date of March 28th, by letter copy of which is enclosed, and which is now being forwarded to the Co-Ordination Committee for immediate action on the necessary appropriations.

The use of iso-octane for producing improved aviation gasoline and the method of its manufacture are known outside of the United States and it is probable that the air forces of the entire world will be doing experimental work with iso-octane and concentrating their intention on its availability to them.

The difficulty with iso-octane is that the production at the present time is limited to the utilization of the by-product iso-butylene present in gases formed by the cracking process. The amount available is roughly of the order of ¼ of 1% of the gasoline produced. This small amount is entirely adequate for development work and extensive flight testing. It is even adequate for peace-time military and naval aviation use in a large part of the world at least. It is totally inadequate for any war-time use.

It appears, therefore, that any program of the air forces involving the use of high-powered engines which require 100-octane number fuel must depend upon the oil industry finding some way of producing iso-octane in quantities much larger than are available at the present time, or finding some other method of producing a satisfactory quality 100-octane number fuel.

Digitized by Google

The first possibility, that, is the production of large quantities of iso-octane, is very unattractive because of the costs, time required, and losses and difficulties which appear to be involved. While synthesis is possible the supplies seem to be too far ahead and to expensive to be of present military importance.

On the second possibility, the prospects seem to be good. We have produced experimentally, by hydrogenation, aviation gasoline of the required characteristics which looks as though it would be satisfactory, although it is too early to make a definite promise. The advantage of this product is that with our 10,000 barrels per day of hydrogenation capacity and with ample quantities of the right quality of feed stock instantly available to us in the United States, we could make the required gasoline from the beginning of hostilities onward at rates much faster than it could possibly be required by our air forces.

Assuming that the present promise will be borne out, it therefore appears that our cooperation with the fighting forces will permit of a practical and satisfactory program for converting our entire fighting aviation equipment over to 100-octane number standard. Roughly this means for the same weight and size the engines would have 25% more power than the engines adapted for the best fuel available today (87 octane number). The transition stage of this development for our fighting forces can be taken care of by iso-octane production and perhaps by various other small scale specialty operations of other suppliers. It seems possible that full peace-time requirements for the United States Army and Navy might also be taken care of in this way if the entire domestic production of iso-octane was reserved for that purpose. This program of change-over could safely be undertaken immediately because of the availability of the requisite large quantity of fuel which could be produced by hydrogenation in case of war. If we are successful in our present experiments our Army Air Corps can therefore proceed at once with full confidence on a program of engine improvement based on superior fuels which will put them far ahead of the rest of the world as regards performance of their fighting equipment.

This possibility is of course extremely attractive to the Army Air Corps but there is one difficulty involved which Mr. Russell quite frankly discussed. The hydrogenation development originated in Germany and through cooperation all around has now passed into the hands of the oil industry of the entire world, and to a certain extent, into the hands of the foreign chemical industry as well. There is a full and free exchange of technical information between all of the companies and units involved in the hydrogenation development and this exchange is not only by means of reports but by constant visits of technical men. To cut off these reports and shut our hydrogenation plants against these visitors would be not only a violation of these agreements which would involve us in many difficulties, but would also be tantamount to a confession that we were engaged in some work of special military value which would mean that the plants would become a focal point for espionage. The costs and difficulties of protecting against leakage of information about large commercial operations under such conditions is hard to estimate. It seems that the only practical way to handle this problem is to avoid carrying out the operation of producing 100-octane numberaviation gasoline commercially as long as possible. We would, of course, also have to breach our agreements to render full and complete technical reports to all of the companies associated with us (even to the American companies, for fear of leakage). We should also forfeit the advantage in producing at the least cost the best available gasoline for commercial purposes.

Any program by which the Army Air Corps can obtain their objective of a one or two year start over the rest of the world on this vital matter bristles with difficulties and sacrifices from our standpoint. We will not have to cross the bridge finally until our present experiments are completed. When and if we are able to demonstrate that the hydrogenation plants are capable of turning out an aviation product which with the usual quantity of lead can be brought up to 100-octane number, we shall be faced with the situation mentioned above. To meet the very proper desires of the Air Corps as expressed to us we shall have to violate our agreements and perhaps forfeit the confidence of our associates, both American and foreign, and beyond this we shall either have to avoid any commercial use of the new method or run the very grave risk of finding that our efforts at secrecy have been abortive.

Digitized by Google

DECEMBER 11, 1935.

Special Delivery

Brigadier General OSCAR WESTOVER,
Assistant Chief, Army Air Corps., Washington, D. C.

MY DEAR GENERAL WESTOVER: I should appreciate your advice on the following points:

ISO-OCTANE

1. Is there any reason why we should further postpone performance of our contractual obligations to pass on to our American associates in the Hydro Patents Company, to the International Hydrogenation Engineering & Chemical Company at The Hague, and the I. G. Farbenindustrie in Germany, the results of our development work on the production of high octane (95 or better) aviation gasoline by hydrogenation? You will remember this is a subject on which we have had much discussion in the past.

2. Is there any reason why we should refrain from contracting through our European affiliates for the supply of iso-octane in large quantities to French, German, and English air lines or governments? There is a very active interest in this question at the present time and the normal policy of our European affiliates would be to follow up this business and to endeavor to supply any demand which exists. The effect will be to stimulate interest in the development of engines to make use of this product abroad and to drain from America a small inventory which might accumulate here. On the other hand, the effect of a world-wide stimulation of this business will unquestionably be to stimulate production in the United States and thus increase the supply potentially available for American consumption at any time.

3. As a direct indication of the effect of increased interest both outside of and within the United States on the stimulation of production of iso-octane, we beg to advise you that we have under active consideration at this moment two projects, one for the production of 1,000 barrels per day and another for the production of 250 barrels per day of iso-octane within the United States. Assuming that the interests of the service would permit you to express such an opinion, I would appreciate very much your opinion as to whether we may look forward to such a probable expansion of the high octane gasoline business as to justify us in considering that this additional output of iso-octane will probably be needed for the calendar year 1937, which would be about the earliest time the whole increase could be brought into production.

Very truly yours,

FRANK A. HOWARD.

FAH:CFG-VLW
CC: Mr. R. P. Russell

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF THE AIR CORPS,
WASHINGTON, *December 27, 1935.*

Mr. FRANK A. HOWARD, *President,*
Standard Oil Development Company,
26 Broadway, New York, N. Y.

DEAR MR. HOWARD: This is in reply to your letter of December 11, 1935, subject, Iso-Octane.

It has been decided that the military status of high anti-knock fuels shall be nonsecret, as regards release of information, both in this country and abroad. The foreign sale of iso-octane and other high anti-knock fuels is a matter which comes under the jurisdiction of the State Department rather than the War Department.

In regard to future procurement of 100 octane fuel, it is not possible at the present time to determine just how much will be procured by the Air Corps during the calendar year 1937. The present total fuel consumption in all types of engines in the Air Corps is less than half the quantity of 100 octane fuel which can be blended from 1,000 barrels of iso-octane per day, so that, obviously, the Air Corps cannot possibly use such a quantity of iso-octane with present peacetime

Digitized by Google

strength. It is possible that the Bureau of Aeronautics, Navy Department, will procure iso-octane blends in the future and that they will be valuable for commercial use as well. That, of course, is a matter on which the Air Corps is not in a position to give any definite information.

Very truly yours,

O. WESTOVER,
Major General, Air Corps,
Chief of the Air Corps.

JUNE 28, 1935.

Major C. W. HOWARD,
War Department, Office of the Chief of the Air Corps,
Washington, D. C.

DEAR SIR: Referring to the conference had by you with Messrs. F. A. Howard, R. P. Russell, and myself, and to your request that we refrain from disclosing to others our latest developments in the production of aviation gasoline by hydrogenation, this will confirm our statement to you that we desire to cooperate in line with your request subject, however, to important contract obligations, which we have, to disclose to the licensees of the hydrogenation process all information regarding developments and improvements in products.

The hydrogenation process as used herein means the process of treating carbonaceous substances, specifically coal or oil, with hydrogen under reacting conditions to produce oil products. If coal be the material treated, the first product is a synthetic crude oil. This synthetic crude oil or any other oil may also be treated in a variety of ways by the hydrogenation method to yield practically all types of marketable petroleum products, including especially gasolines of various qualities.

This process originated in Germany and was developed there to a considerable extent as applied to coal before the Standard Oil Company (New Jersey) acquired any interest in it. In 1927 the latter company made an agreement with I. G. Farbenindustrie A. G. to join in the development of the process for oil refining and to take over an interest in the U. S. patent rights only. On November 9, 1929, the limited agreement above referred to was superseded by a general agreement by which the hydrogenation process passed into the control of Standard-I. G. Company, a corporation controlled by Standard Oil Company (New Jersey) but in which I. G. Farbenindustrie A. G. has a substantial interest. The rights transferred covered both coal and oil for all countries outside of Germany. This agreement contained the following provision:

"The parties agree to work together on the technical development of the hydrocarbon field; to communicate to each other during the life and within the scope of this agreement all technical knowledge and experience, past, present and future, patented and unpatented, of which the parties are now possessed or shall hereafter be possessed, in the sense of having the power to dispose of them, and also to help each other in their efforts to obtain adequate patent protection."

The Standard-I. G. Company immediately proceeded to organize a holding company for the United States patent rights. Participation in this company, known as the Hydro Patents Company, was offered to all refiners in the United States having more than 20,000 barrels a day of crude refining capacity. The participations were accepted by the great majority of those to whom the offer was made. As an incident to their participation in the Hydro Patents Company, the American Refining companies, eighteen in number, all took licenses under the hydrogenation process, and through an intermediate Engineering Corporation arranged to exchange their experience and technical improvements with one another, and through Standard-I. G. with the I. G. Farbenindustrie. The contract relations involved in this U. S. set-up are rather complex, but the pertinent point is covered in the following sentence from contract E of the series of agreements:

"Engineering represents and warrants that it is in possession of or has and will have available to it the present and future (until December 31, 1947) experience and technical information and knowledge of I. G. Farbenindustrie Aktiengesellschaft and Standard Oil Company (New Jersey) and all corporations which are in effect the sole property of either or both of them, relating to the Licensed Operation, and is authorized to transmit such experience and technical information to all licensees of Hydro Patents Company. Engineering agrees to give Licensee technical assistance requested in connection with the maintenance, operation, and repair of equipment and will endeavor upon request from time to time to keep Licensee informed as to all technical developments and experience known to Engineering and of use to Licensee in connection with the carrying on of the Licensed Operation."

Digitized by Google

Also the following:

"Engineering shall have access to any and all plants and parts thereof belonging to Licensee in which any part of the licensed operation is conducted at all reasonable hours for the purpose of inspecting the equipment used and the operations conducted therein and Licensee agree to supply to Engineering, for the benefit of all licensees of Hydro Patents Company, any information in its possession concerning the performance of such equipment and the nature and results and all technical details of the operations conducted."

The stockholder licensees of Hydro Patents Company, which are entitled to receive information regarding improvements and developments as well as to give it to other licensees and to the Standard-I. G. for the benefit of Standard Oil Company (New Jersey) and I. G. Farbenindustrie A. G., are as follows:

Standard Oil Company of California
Union Oil Co. of California [1]
Richfield Oil Co. of California [1]
Continental Company
Skelly Oil Company
Standard Oil Company (Indiana)
The Pure Oil Company
Standard Oil Company (Ohio)
Gulf Refining Company [1]
Mid-Continent Petroleum Corporation
Atlantic Refining Company
The Texas Company
Shell Union Oil Corporation
Socony-Vacuum Corporation
Sinclair Refining Company
Barnsdall Corporation
Cities Service Company
Standard Oil Development Company

The Standard-I. G. Company disposed of the patent rights on the hydrogenation process outside of the United States to the International Hydro Patents Company, a foreign corporation owned jointly by foreign subsidiaries of Standard Oil Company (New Jersey) and the Royal Dutch Shell Group. A companion corporation, International Engineering & Chemical Company, assumed technical and engineering activities for International Hydro Patents Company in the same manner in which Hydro Engineering & Chemical Company assumed the same activities in the United States. The two Engineering Companies are bound to exchange their technical knowledge in the same way as earlier quoted.

The International Hydro Patents Company has entered into an agreement with the Imperial Chemical Industries of Great Britain licensing the latter company to conduct the hydrogenation operation in the British Empire. This license contains provisions for exchange of technical information as exemplified in the contracts earlier quoted.

The hydrogenation process is from a technical standpoint one of the most difficult and involved of all industrial operations. The investment required, even for the simplest laboratory work, is very considerable, and the range of technique, experience and skill required for successful operation covers the widest fields of engineering and chemistry. Investment and operating costs are very high and the process cannot be profitably carried on at present except behind high tariff walls or for the production of especially high-quality, high-priced products. All the parties in it, however, recognize its present technical importance and its potential overwhelming industrial importance, if and when either of two contingencies arises:

(*a*) World level of petroleum prices rises materially, or
(*b*) The continued technical improvements in the process further reduce investment and operating costs.

In the entire world there are only five commercial hydrogenation plants in operation at the present time, as follows:

Merseburg, Germany	350,000 tons per annum.
Ludwigshafen, Germany	Small.
Billingham, England	150,000 tons per annum.
Bayway, New Jersey	5,000 barrels per day.
Baton Rouge, La	5,000 barrels per day.

[1] Have not yet signed license agreements, but will probably do so.

Digitized by Google

strength. It is possible that the Bureau of Aeronautics, Navy Department, will procure iso-octane blends in the future and that they will be valuable for commercial use as well. That, of course, is a matter on which the Air Corps is not in a position to give any definite information.

Very truly yours,

O. WESTOVER,
Major General, Air Corps,
Chief of the Air Corps.

JUNE 28, 1935.

Major C. W. HOWARD,
War Department, Office of the Chief of the Air Corps,
Washington, D. C.

DEAR SIR: Referring to the conference had by you with Messrs. F. A. Howard, R. P. Russell, and myself, and to your request that we refrain from disclosing to others our latest developments in the production of aviation gasoline by hydrogenation, this will confirm our statement to you that we desire to cooperate in line with your request subject, however, to important contract obligations, which we have, to disclose to the licensees of the hydrogenation process all information regarding developments and improvements in products.

The hydrogenation process as used herein means the process of treating carbonaceous substances, specifically coal or oil, with hydrogen under reacting conditions to produce oil products. If coal be the material treated, the first product is a synthetic crude oil. This synthetic crude oil or any other oil may also be treated in a variety of ways by the hydrogenation method to yield practically all types of marketable petroleum products, including especially gasolines of various qualities.

This process originated in Germany and was developed there to a considerable extent as applied to coal before the Standard Oil Company (New Jersey) acquired any interest in it. In 1927 the latter company made an agreement with I. G. Farbenindustrie A. G. to join in the development of the process for oil refining and to take over an interest in the U. S. patent rights only. On November 9, 1929, the limited agreement above referred to was superseded by a general agreement by which the hydrogenation process passed into the control of Standard-I. G. Company, a corporation controlled by Standard Oil Company (New Jersey) but in which I. G. Farbenindustrie A. G. has a substantial interest. The rights transferred covered both coal and oil for all countries outside of Germany. This agreement contained the following provision:

"The parties agree to work together on the technical development of the hydrocarbon field; to communicate to each other during the life and within the scope of this agreement all technical knowledge and experience, past, present and future, patented and unpatented, of which the parties are now possessed or shall hereafter be possessed, in the sense of having the power to dispose of them, and also to help each other in their efforts to obtain adequate patent protection."

The Standard-I. G. Company immediately proceeded to organize a holding company for the United States patent rights. Participation in this company, known as the Hydro Patents Company, was offered to all refiners in the United States having more than 20,000 barrels a day of crude refining capacity. The participations were accepted by the great majority of those to whom the offer was made. As an incident to their participation in the Hydro Patents Company, the American Refining companies, eighteen in number, all took licenses under the hydrogenation process, and through an intermediate Engineering Corporation arranged to exchange their experience and technical improvements with one another, and through Standard-I. G. with the I. G. Farbenindustrie. The contract relations involved in this U. S. set-up are rather complex, but the pertinent point is covered in the following sentence from contract E of the series of agreements:

"Engineering represents and warrants that it is in possession of or has and will have available to it the present and future (until December 31, 1947) experience and technical information and knowledge of I. G. Farbenindustrie Aktiengesellschaft and Standard Oil Company (New Jersey) and all corporations which are in effect the sole property of either or both of them, relating to the Licensed Operation, and is authorized to transmit such experience and technical information to all licensees of Hydro Patents Company. Engineering agrees to give Licensee technical assistance requested in connection with the maintenance, operation, and repair of equipment and will endeavor upon request from time to time to keep Licensee informed as to all technical developments and experience known to Engineering and of use to Licensee in connection with the carrying on of the Licensed Operation."

Digitized by Google

Also the following:

"Engineering shall have access to any and all plants and parts thereof belonging to Licensee in which any part of the licensed operation is conducted at all reasonable hours for the purpose of inspecting the equipment used and the operations conducted therein and Licensee agree to supply to Engineering, for the benefit of all licensees of Hydro Patents Company, any information in its possession concerning the performance of such equipment and the nature and results and all technical details of the operations conducted."

The stockholder licensees of Hydro Patents Company, which are entitled to receive information regarding improvements and developments as well as to give it to other licensees and to the Standard-I. G. for the benefit of Standard Oil Company (New Jersey) and I. G. Farbenindustrie A. G., are as follows:

Standard Oil Company of California
Union Oil Co. of California [1]
Richfield Oil Co. of California [1]
Continental Company
Skelly Oil Company
Standard Oil Company (Indiana)
The Pure Oil Company
Standard Oil Company (Ohio)
Gulf Refining Company [1]
Mid-Continent Petroleum Corporation
Atlantic Refining Company
The Texas Company
Shell Union Oil Corporation
Socony-Vacuum Corporation
Sinclair Refining Company
Barnsdall Corporation
Cities Service Company
Standard Oil Development Company

The Standard-I. G. Company disposed of the patent rights on the hydrogenation process outside of the United States to the International Hydro Patents Company, a foreign corporation owned jointly by foreign subsidiaries of Standard Oil Company (New Jersey) and the Royal Dutch Shell Group. A companion corporation, International Engineering & Chemical Company, assumed technical and engineering activities for International Hydro Patents Company in the same manner in which Hydro Engineering & Chemical Company assumed the same activities in the United States. The two Engineering Companies are bound to exchange their technical knowledge in the same way as earlier quoted.

The International Hydro Patents Company has entered into an agreement with the Imperial Chemical Industries of Great Britain licensing the latter company to conduct the hydrogenation operation in the British Empire. This license contains provisions for exchange of technical information as exemplified in the contracts earlier quoted.

The hydrogenation process is from a technical standpoint one of the most difficult and involved of all industrial operations. The investment required, even for the simplest laboratory work, is very considerable, and the range of technique, experience and skill required for successful operation covers the widest fields of engineering and chemistry. Investment and operating costs are very high and the process cannot be profitably carried on at present except behind high tariff walls or for the production of especially high-quality, high-priced products. All the parties in it, however, recognize its present technical importance and its potential overwhelming industrial importance, if and when either of two contingencies arises:

(*a*) World level of petroleum prices rises materially, or
(*b*) The continued technical improvements in the process further reduce investment and operating costs.

In the entire world there are only five commercial hydrogenation plants in operation at the present time, as follows:

Merseburg, Germany	350,000 tons per annum.
Ludwigshafen, Germany	Small.
Billingham, England	150,000 tons per annum.
Bayway, New Jersey	5,000 barrels per day.
Baton Rouge, La	5,000 barrels per day.

[1] Have not yet signed license agreements, but will probably do so.

Digitized by Google

Further large plants are under construction at two locations in Germany. A third 5,000 barrel per day plant stands partly completed at Baytown, Texas, and could be wholly completed within six months or less.

The direct financial considerations involved in the agreements referred to above are very large. In addition, all of the parties to these agreements have recognized that they are involved in the common enterprise of endeavoring to improve and perfect a new major industrial development. The agreements for technical cooperation and exchange of information are, therefore, correspondingly broad as well as detailed, and furthermore there has been up to this time complete confidence and the fullest measure of technical cooperation among all of the parties interested.

Very truly yours,

GUY WELLMAN.

GW:AS

APRIL 19, 1935.

Mr. W. C. TEAGLE,
Mr. W. S. FARISH.

DEAR SIR: In further reference to the memorandum covering Mr. Russell's visit with the Army Air Corps people, we have been proceeding with our work on the preparation of high-octane number aviation gasolines by hydrogenation of various stocks. Our conclusion is that we will soon have to be in this business commercially, and we cannot see how it is going to be possible as a practical matter to long withhold the information from the companies associated with us in the hydrogenation pool. Much as we should like to please the Army Air Corps, therefore, we feel that we must explain the situation in detail to them and make it clear that the difficulties in the way of attempting to maintain absolute secrecy concerning methods of production of this material seem to us too great.

Having in mind your interest in this question, we would like to secure your approval before Mr. Russell approaches the Army Air Corps on this matter. Will you please let him have your decision.

Very truly yours,

FRANK A. HOWARD.

FAH:VLW

Digitized by Google

Digitized by Google

Digitized by Google

Y4.M 2 T: C 66/2

SCIENTIFIC AND TECHNICAL MOBILIZATION

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON MILITARY AFFAIRS UNITED STATES SENATE

SEVENTY-EIGHTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 107

A RESOLUTION AUTHORIZING A STUDY OF THE POSSIBILITIES OF BETTER MOBILIZING THE NATIONAL RESOURCES OF THE UNITED STATES

AND ON

S. 702

A BILL TO MOBILIZE THE SCIENTIFIC AND TECHNICAL RESOURCES OF THE NATION, TO ESTABLISH AN OFFICE OF SCIENTIFIC AND TECHNICAL MOBILIZATION, AND FOR OTHER PURPOSES

PART 7

NOVEMBER 4, 1943

MONOPOLY AND CARTEL PRACTICES

Titanium

Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1944

81949

Digitized by Google

COMMITTEE ON MILITARY AFFAIRS

ROBERT R. REYNOLDS, North Carolina, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
ALBERT B. CHANDLER, Kentucky
HARRY S. TRUMAN, Missouri
MON C. WALLGREN, Washington
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
RUFUS C. HOLMAN, Oregon
HENRY CABOT LODGE, JR., Massachusetts
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

WESLEY E. MCDONALD, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
MON C. WALLGREN, Washington
JAMES E. MURRAY, Montana

RUFUS C. HOLMAN, Oregon
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
CHARLES KRAMER, *Economic Adviser*
COLEMAN ROSENBERGER, *Hearings Editor*

Digitized by Google

CONTENTS

	Page
Testimony of the Honorable Wendell Berge, Assistant Attorney General of the United States, in charge of the Antitrust Division, Department of Justice	959

SCHEDULE OF EXHIBITS

No.	Exhibit	Introduced on page—	Appears on page—
156.	Indictment, *United States of America* v. *National Lead Company et al*, in the District Court of the United States for the Southern District of New York, June Term 1943, filed with the committee.	976	------

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, NOVEMBER 4, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee met at 10:59 a. m., pursuant to adjournment on Thursday, October 21, 1943, in room 104, Senate Office Building, Senator Harley M. Kilgore, West Virginia (chairman of the subcommittee), presiding.

Present: Senator Harley M. Kilgore, West Virginia (chairman).

Also present: Herbert Schimmel, chief investigator; Dr. Robert M. Hunter, Department of Justice.

TESTIMONY OF HON. WENDELL BERGE, ASSISTANT ATTORNEY GENERAL OF THE UNITED STATES

Mr. BERGE. Mr. Chairman, this is the story of the titanium cartel, which is a typical cartel.

The CHAIRMAN. What is titanium, for the benefit of the record? What is it used in?

Mr. BERGE. It is used in paint. I am going to come to that directly. It is a valuable, useful white pigment and, as my story proceeds, we will indicate how it was developed and where it was developed. I believe that it is superior to white lead, but it is that kind of a product. Most people know what white lead is, and I would say generically it is in that field. It is different, and it is an improvement, I believe, from a scientific standpoint.

The CHAIRMAN. It does the work of white lead in a better way?

Dr. SCHIMMEL. That is in the oxide form, of course?

Mr. BERGE. I mean, of course, in the oxide form.

The CHAIRMAN. Go right ahead.

Mr. BERGE. The president of one of the American companies which dominate it was thoughtful or thoughtless enough to define it. He wrote to one of the European officials as follows:

> May I call the proposed combination, for simplicity, a cartel? The whole purpose of the cartel is to obtain a monopoly of patents, so that no one can manufacture it [titanium] excepting the members of the cartel, and so can raise the prices by reason of such monopoly to a point that would give us much more profit on our present tonnage, but also prevent a growth in tonnage that would interfere with their greater profits in lithopone [a competing but inferior product].

It is typical because it has utilized the devices and followed the practices which are found in greater or lesser degree in all cartel

Digitized by Google

Digitized by Google

SCIENTIFIC AND TECHNICAL MOBILIZATION

THURSDAY, NOVEMBER 4, 1943

UNITED STATES SENATE,
COMMITTEE ON MILITARY AFFAIRS,
SUBCOMMITTEE ON WAR MOBILIZATION,
Washington, D. C.

The subcommittee met at 10:59 a. m., pursuant to adjournment on Thursday, October 21, 1943, in room 104, Senate Office Building, Senator Harley M. Kilgore, West Virginia (chairman of the subcommittee), presiding.

Present: Senator Harley M. Kilgore, West Virginia (chairman).

Also present: Herbert Schimmel, chief investigator; Dr. Robert M. Hunter, Department of Justice.

TESTIMONY OF HON. WENDELL BERGE, ASSISTANT ATTORNEY GENERAL OF THE UNITED STATES

Mr. BERGE. Mr. Chairman, this is the story of the titanium cartel, which is a typical cartel.

The CHAIRMAN. What is titanium, for the benefit of the record? What is it used in?

Mr. BERGE. It is used in paint. I am going to come to that directly. It is a valuable, useful white pigment and, as my story proceeds, we will indicate how it was developed and where it was developed. I believe that it is superior to white lead, but it is that kind of a product. Most people know what white lead is, and I would say generically it is in that field. It is different, and it is an improvement, I believe, from a scientific standpoint.

The CHAIRMAN. It does the work of white lead in a better way?

Dr. SCHIMMEL. That is in the oxide form, of course?

Mr. BERGE. I mean, of course, in the oxide form.

The CHAIRMAN. Go right ahead.

Mr. BERGE. The president of one of the American companies which dominate it was thoughtful or thoughtless enough to define it. He wrote to one of the European officials as follows:

> May I call the proposed combination, for simplicity, a cartel? The whole purpose of the cartel is to obtain a monopoly of patents, so that no one can manufacture it [titanium] excepting the members of the cartel, and so can raise the prices by reason of such monopoly to a point that would give us much more profit on our present tonnage, but also prevent a growth in tonnage that would interfere with their greater profits in lithopone [a competing but inferior product].

It is typical because it has utilized the devices and followed the practices which are found in greater or lesser degree in all cartel

Digitized by Google

arrangements which the Antitrust Division has investigated. The members of this cartel include I. G. Farbenindustrie, the German chemical trust, and many other foreign companies. The American scene is dominated by three American corporations—the National Lead Co., the du Pont Co., and Titan Co., Inc. These three companies and four of their leading officials were indicted by a grand jury in the Southern District of New York on June 28, 1943. The trial of the indictment has not been held.

The CHAIRMAN. I believe at a previous hearing you told us how many of these agreements affecting the United States I. G. Farben had entered into. Do you remember the number?

Mr. BERGE. I think it was 162.

The CHAIRMAN. Go right ahead.

Mr. BERGE. The case is pertinent to the interests of this committee for several reasons.

(1) Titanium, the most valuable and useful of all white pigments for paints, rubber products, glass, paper, enamel, and other materials, has been priced exorbitantly and its use restricted because of the monopolistic control exercised over it by a world-wide cartel.

Now, when I use the word "exorbitantly," I don't mean in any way to deprecate the product, because we think it is the best in this field; but I use it in the sense of exorbitant in relation to what it well would have been under a competitive situation. I think that the fact that the prices were raised is indicated by the stated purpose of the cartel in the language of one of the officials, which I just read.

The CHAIRMAN. By "exorbitant" you mean the sale price as compared to the cost of production?

Mr. BERGE. Yes.

The CHAIRMAN. You mention rubber. Isn't titanium used to make white sidewall tires?

Mr. BERGE. I believe it is.

The CHAIRMAN. And which tire dealers maintain are stronger sidewalls than black sidewalls.

Mr. BERGE. (2) American members of the cartel are placed in a position where they have felt obliged to help the Japanese evade the British embargo.

(3) American members have seen fit to aid I. G. Farben in attempting to prevent seizure of German-owned patents by the American Alien Property Custodian by the execution of specious patent assignments.

(4) To attain such monopolistic control, the cartel has resorted to flagrant misuse of patents and has gone so far as to actually pay large sums to potential competitors to keep them out of the titanium business.

(5) I. G. Farben, the German chemical trust, as one of the leading parties to the cartel, has dictated the terms upon which American members might do business.

(6) The fact that du Pont, Imperial Chemical Industries, and I. G. Farben are also members of other cartels, such as that involving dyestuffs, makes their control of a fine pigment such as titanium the more objectionable.

Digitized by Google

The CHAIRMAN. Isn't Imperial Chemical Industries the British chemical trust of which the president is Lord McGowan? I believe an article in Life magazine a couple of weeks ago quoted him as saying the Sherman antitrust law would have to be repealed so American and British business could collaborate in the post-war period.

Mr. BERGE. I read the article. I think I have a copy of it here in my brief case. And I was gratified to read that Mr. Eric Johnston assured Lord McGowan that there was little chance of such repeal, and that Mr. Benton, the author of that article in Life, answered Lord McGowan that it was more likely, in view of the activities of the Department of Justice in recent years, that the antitrust law would be strengthened.

The CHAIRMAN. It appears to me that American companies which participate in international cartels usually suffer in comparison with the foreign companies. Ours are independent companies, and they are dealing with foreign companies which are government-controlled and are geared to a common program. Isn't that a real danger to our American economy?

Mr. BERGE. I suppose, if we want to adopt the cartel system in this country as the accepted mode of doing business, we would find it would be good public policy, then, to put them on more of a par in negotiation with foreign cartels through some sort of state sponsorship. But, of course, to my mind, it flies in the face of all that we Americans desire and want in an economic system.

The CHAIRMAN. I am in hearty agreement with you on that.

Dr. SCHIMMEL. Isn't it true that this marriage of the German Government and cartels was actually the basis for the war which we have today?

Mr. BERGE. I certainly think it was one of the major factors.

The CHAIRMAN. Go ahead.

Mr. BERGE. It is difficult to think of any material which is more universally used by private citizens and by governments alike than is paint. In time of peace the United States Government buys and uses enormous quantities of paint. In this time of war its purchases account for by far the greater portion of all the paint manufactured in the entire country.

It is a fact which is not widely known that the finest of all white pigments, useful in colored paints as well as white, is titanium dioxide. It is also not generally known that titanium is the ninth most abundant element in the earth. Crude titanium is found in combination with iron in an ore called ilmenite in many places in this and other countries.

Dr. SCHIMMEL. Where is it found in this country?

Mr. BERGE. I know there is a large deposit in New York State which is being worked, and there are deposits in many other places where the concentration of titanium is not great enough to make production possible as yet. I understand there is a large sand beach in Florida, owned by National Lead, which has considerable concentration of titanium. One of the deposits that is the purest in the world, or where it is found in a very pure form, is in the sands of a beach in India, Travancore Beach, and in lesser concentration in other places.

Digitized by Google

While the element itself is abundant, no commercially practical processes for reducing it to pigment form were known until about the time of the First World War. In the relatively short period which has passed since then technology has been developed which makes possible the manufacture of the finest pigment from titanium. It has already displaced white lead, lithopone, and other pigments in a large share of the market. In hiding power—covering qualities—opacity and chemical inertness, all essential qualities for paints, titanium compounds, chiefly titanium dioxide, excel all other kinds of pigments.

Shortly after the Civil War it was discovered that titanium ore could be reduced to a powder which when mixed with oil resulted in a paint. It was not until about the beginning of World War No. I that a feasible method of separating titanium oxide from the ore was worked out. This was accomplished by two chemists, Dr. A. J. Rossi and L. E. Barton, whose research was done for the Titanium Alloy Manufacturing Co., organized by Dr. Rossi and others in 1906. As a result of their discovery, a new corporation called the Titanium Pigment Co. was formed in 1916. At that time, as well as subsequently, the leading manufacturer of white pigment was the National Lead Co. Recognizing the implications of titanium's excellence in this field, National Lead purchased a substantial interest in the Titanium Pigment Co. in 1920. The two companies continued to operate more or less separately until 1932, when National Lead acquired the entire stock of Titanium Pigment. In 1936 the Titanium Pigment was dissolved as a corporation and its business and properties were taken over and operated as a division of National Lead.

The CHAIRMAN. Is National Lead a large company?

Mr. BERGE. Yes; its assets exceed $100,000,000, and it is the largest manufacturer of titanium pigments.

The CHAIRMAN. Rossi and Barton, who first did this work, were American research people?

Mr. BERGE. Yes.

The CHAIRMAN. And it really is an American development?

Mr. BERGE. Oh, yes. I am going to show later, in just a moment, that working independently of these Americans, similar processes were hit upon by foreign scientists about the same time or a little later, but the development in this country was the result of the work of Rossi and Barton, and they formed this Titanium Alloy Co., and later National Lead, through acquisition, succeeded to it.

During substantially the same period in which this development was taking place in this country, a different process for the manufacture of titanium compounds was being developed in Norway by Gustav Jebsen. His process was patented and was exploited by a Norwegian corporation called Titan Co. A/S. At about the same time a Russian chemist named Joseph Blumenfeld was perfecting, in France, another method of manufacture, which was likewise patented. Thus, prior to 1920 three groups working independently of one another had developed processes for utilizing titanium ore for production of pigments. These groups are:

1. Titanium Pigment Co., subsequently absorbed by National Lead Co.

Digitized by Google

2. Titan Co. A/S. originally organized in Norway by Jebsen for the exploitation of his developments. Eighty-seven percent of Titan Co.'s stock was purchased by National Lead in 1927, the remaining 13 percent being retained by Jebsen. This company was originally intended to exploit the foreign interests of National Lead, but in 1929 National Lead and Jebsen organized in Delaware a holding company called Titan Co., Inc., the sole function of which was to hold all foreign interests of the parties. The Norwegian company remained in existence in Norway solely as the sales agent for Titan Co., Inc.

3. The Blumenfeld interests in France. Whereas National Lead and Jebsen chose to exploit their patents by means of operating companies, Blumenfeld followed a general policy of licensing other interests.

Now we will take up the main agreement of 1920 between Titanium Pigment Co. (now part of National Lead) and the Norwegian Titan Co. This is an important agreement in this picture.

Titanium Pigment and Titan Co. in Norway entered into a contract dated July 30, 1920, which is the foundation upon which the parties and their successor companies have been able to build a cartel with monopoly ramifications extending throughout the world. This contract was to extend to 1936 and was to be automatically renewed for 10-year periods unless terminated by 5-year notice.

The CHAIRMAN. Was such notice given in '41?

Mr. BERGE. I understand not.

By the terms of this agreement, National Lead (as Titanium Pigment and its successor in interest will now be called)—Whenever we speak, now, of National Lead—they took over, I believe, in 1927, but it is difficult to differentiate all the time as I go along—I will refer to it, hereafter, as National Lead. National Lead was assigned the markets of North America as its exclusive territory. Titan Co. A/S was given the rest of the world with the exception of South America, which was to be common territory. The two companies granted each other exclusive licenses under their patents for their respective territories, excluding even the licensor from the licensee's territory. Each agreed not to ship into the other's territory and to prevent its licensees from shipping their finished products into the other's territory if it would interfere with the other party's sales. Any sublicensee was required to be governed by the same restrictions as the parties imposed upon themselves.

The parties agreed to exchange know-how and also to permit visits of representatives to their respective plants. Each party undertook to secure from its employees assignment of any and all inventions developed by them. In acquiring rights to inventions from third parties, each agreed to secure rights for all countries within the territory of the other party.

The CHAIRMAN. Have you ever found any company which didn't require its employees to assign all their inventions to it?

Mr. BERGE. I think it is the universal practice to have such requirement.

The CHAIRMAN. The reason I ask that question is that there has been considerable controversy that the Government, procuring patents

Digitized by Google

from its employees and people under contract to it, would be doing grave injustice and would be putting a strait jacket on inventive genius and would be robbing these men of their rights. Would they be as near robbery under the bill as the system now practiced?

Mr. BERGE. I am sure not. In fact, at present, the man becomes a salaried employee, and a salaried employee assigns anything he may invent to the corporation. Of course, it is patented in his name.

The CHAIRMAN. Because the corporation, under our laws, cannot patent it.

Mr. BERGE. That is right. Only individuals can patent.

And I think it is also true that, generally speaking, in laboratories, private corporations, the work a man shall do is to a considerable extent assigned to him. Of course, there may be various degrees of liberty allowed in pursuing—allowed to the employee—independent research on his own, but generally speaking, I think they block it off and assign their men to particular projects.

To illustrate, it is like hunting for a needle in a haystack; if one man, operating independently on the old-time basis of the inventor who works in his own shop or his own basement really finds something, we find the needle in the haystack; you have really done something notable.

But if you block off the stack into cubic feet and you have men, each canvassing a particular foot of hay, I suppose the man who finds the needle is not entitled to any particular credit more than the ones who do not find it. He happened to get the cubic foot that had the needle in it.

The CHAIRMAN. But the statement of Doctor Egloff and others would lead the public, however, to believe that independent research is still carried on in all private laboratories, and every man does as he pleases.

Mr. BERGE. I am confident that is not so.

The CHAIRMAN. In fact, it wouldn't be good business to do it that way.

Mr. BERGE. No.

Following the execution of the 1920 agreement, the parties operated under it until 1927.

Jebsen, having Europe as part of his territory, set up a selling company in France. This was originally intended to become a manufacturing company also, but this idea was never carried out. National Lead acquired a majority interest in this company in 1927. At the same time it acquired 87 percent interest in Titan Co., the Norwegian company, Jebsen retaining the remaining 13 percent.

Also in 1927 National Lead and Jebsen formed a new company in Germany in conjunction with I. G. Farben. This company, Titangesellschaft, was organized as part of a series of transactions including the execution of nine separate contracts. Titangesellschaft was given as its exclusive territory for manufacture and sale of titanium compounds the following countries: Germany, Russia, Austria, Hungary, Czechoslovakia, Switzerland, Rumania, Serbia, Jugoslavia, Bulgaria, Greece, Turkey, Japan, China, and Spain. In 1933 Titangesellschaft eliminated potential competition on the part of the Sachtleben Co.

Digitized by Google

in Germany by the simple expedient of paying it a large sum of money for its agreement to stay out of the titanium business.

In 1929, National Lead and Jebsen organized in Delaware a company called Titan Co., Inc., for the purpose of holding their foreign interests. Titan Co., Inc., succeeded to the position of the Norwegian Titan Co., under the basic agreement of 1920. Thus, we have National Lead as successor to Titanium Pigment as one party to the basic agreement and Titan Co., Inc., owned 87 percent by National Lead, as the other party. However, the 1920 agreement continues in existence, inasmuch as its territorial and license exchange restrictions form the basis and pattern for all the subsequent agreements. Thus, Titan Co., Inc., became entitled to all territory outside North America except as yielded up by the German agreements and others subsequent to them

The CHAIRMAN. As a result of these transactions, did the I. G. Farben Co. obtain exclusive use in the countries you have listed of the patents of Rossi and Barton, for which research had been done in the United States for the Titanium Alloy Manufacturing Co.?

Dr. HUNTER. In the territory in which they operated; yes.

Mr. BERGE. Blumenfeld transferred all his patent rights to a French company known as Societe de Products Chemiques des Terres Rares. This company then licensed or sold them to different companies operating in various European countries, the British Empire, and United States.

In the United States, the patents were first owned by the Commercial Pigments Corporation, which sold them in 1931 to the Krebs Pigment and Color Corporation. At that time, du Pont owned 70 percent of the stock of Krebs. It subsequently acquired 100 percent and now operates it as the Krebs division of du Pont.

So we find the Blumenfeld interests getting into the United States through du Pont.

The CHAIRMAN. In other words, when they first found competition growing up abroad.

Mr. BERGE. National Lead entered upon negotiations with du Pont, looking toward an agreement which would allow the two companies to maintain a monopoly of the titanium business in this country and eliminate competition between them. I. G. Farben insisted that in any such agreement, du Pont must obligate itself not to compete or allow its sublicensees to compete in I. G. Farben's territory: i. e., the world outside the Western Hemisphere.

So there you have the Blumenfeld patents coming into this country through du Pont; National Lead, which has its hookup with Farben, and du Pont, getting together; but in ironing out their arrangements, Farben insisting that its exclusive rights be protected against competition from the du Pont licensees.

The CHAIRMAN. Would this be a fair way to state it—that that follows the usual pattern of I. G. Farben cartels, in which they allow us to exploit ourselves and our South American neighbors, retaining to themselves the right to exploit the rest of the world.

Dr. HUNTER. And also to get in the South American market.

The CHAIRMAN. In competition.

Digitized by Google

Dr. HUNTER. Or divide it up.

Mr. BERGE. When a proposed form of agreement was submitted to I. G. Farben for approval, it objected because the license given by du Pont for foreign territory was a "nonexclusive license." A National Lead official reassured I. G. Farben on this score in the following language, which is quoted from his letter written in 1933, and I quote:

> In regard to the phrase "nonexclusive license" to which you call our attention * * * we have to refer to the United States antitrust laws which absolutely forbid the granting of exclusive licenses between two manufacturers in the United States as such a practice would tend to create a monopoly. Therefore, the use of this phrase "nonexclusive license" is simply to comply with the United States laws and in practice the licenses under each other's patents will undoubtedly prove to be, to all intents and purposes, exclusive.

The CHAIRMAN. Did they prove to be exclusive?

Mr. BERGE. Yes; they did.

The CHAIRMAN. How was this type of arrangement regarded by your department?

Mr. BERGE. I think the answer to that, Senator, is, that in June of this year we indicted the companies involved.

The CHAIRMAN. In other words, they said that their contract should conform, but their performance should not conform to the antitrust laws.

Mr. BERGE. That is right. In my statement, I said we indicted the participants. That must be modified, because we didn't have jurisdiction over all of them. We had jurisdiction over National Lead and the American companies and indicted them.

Dr. SCHIMMEL. Can't you indict Imperial Chemicals and I. G. Farben?

Mr. BERGE. You have to have something to tie to. You can name foreign companies as coconspirators, and you can indict a foreign company when it is present and doing business in this country, or sue them in equity, as in our aluminum case. We have the Aluminum of Canada today as defendant, and there was a battle over whether they did business in this country or not, and it was determined they did.

The CHAIRMAN. And if they are not doing business here, you cannot indict them, because they are not citizens and are not doing business here.

Mr. BERGE. That is right.

I. G. Farben's objections having been met and other difficulties overcome, Titanium Pigments Co., Inc., and Krebs Pigment and Color Corporation, subsidiaries of National Lead and du Pont, respectively, entered into an agreement dated January 1, 1933.

Now, you have an agreement between the operating companies.

It provided for a mutual grant of irrevocable and "nonexclusive rights" and a license within the United States to use all processes, methods, and apparatus of manufacture, including present and future processes and patents. It also provided that each party might sell the products resulting from the exercise of the processes in the United States, Central, and South America. The territorial division of the basic agreement of 1920 was thus preserved.

The CHAIRMAN. In what way did the National Lead and du Pont Co. cut down competition between one another inside the United States?

Digitized by Google

Mr. BERGE. Certainly there was no competition in price. Could you supply anything further, Dr. Hunter, as an answer to that?

Dr. HUNTER. I have the impression there was a very considerable division of markets, respecting each others' markets here, and they worked very closely in cooperation.

The CHAIRMAN. And the use of the word "nonexclusive" in that contract was also with the tongue in the cheek, with a quiet agreement to be exclusive although agreeing to be nonexclusive.

Dr. HUNTER. Seemingly, from the quote that was just read.

Mr. BERGE. The agreement also provided for the exchange of the most detailed information with respect to technical developments and know-how "to the end that all the knowledge and experience of each party in the licensed field shall be at the full disposal of the other." This provision caused some little difficulty between the parties. About 1937 I. G. Farben developed a new titanium pigment (rutile) of exceptionally fine quality which gave a great competitive advantage. It passed the information concerning it to National Lead.

And, of course, under the arrangements that would be available to National Lead. And the information was passed on to National Lead by Farben.

But National Lead failed to inform du Pont of this development, and when du Pont later discovered that such had been the case, it charged National Lead with violation of its agreement. The net result was an amendment in 1941 of their agreement with the elimination of the exchange-of-information provision. Actually, du Pont itself developed a similar rutile pigment and started production of it while National Lead was still guarding the secret it had received from I. G. Farben without producing the pigment.

The CHAIRMAN. Is the conclusion correct that the members of the cartel not only tried to keep information about the scientific progress in pigment from companies outside the cartel, but sometimes even from members in the cartel?

Mr. BERGE. Yes; this instance shows that.

The CHAIRMAN. Please go on.

Mr. BERGE. The 1933 agreement further provided that each party was to pay a royalty to the other on the basis of titanium dioxide produced and packed by it. Du Pont was to pay National Lead a royalty of 2½ percent based on the average published carload price, and National was to pay Krebs (du Pont) 1 percent on a similar basis. It was provided, however, that in no event was royalty to either party to exceed $10,000 in any given year, and all royalties were to cease as of December 31, 1936.

The parties undertook to use their best efforts to acquire the rights for each other from third parties and du Pont further agreed to offer licenses to the foreign associates of National Lead for the various countries of the world. This virtually was a commitment by du Pont to give National Lead's foreign subsidiaries a preference in granting licenses.

Following the execution of the du Pont-National Lead agreement in 1933, du Pont entered into a series of four contracts with Titan Co., Inc. By these agreements, du Pont agreed to turn over all its foreign patents to the various foreign associates of Titan Co., Inc. The result was a virtual consolidation of all the important titanium interests

Digitized by Google

throughout the world. All commercially useful patents were under the control of the parties involved. Future control was assured by the various provisions of the agreements requiring the continuing exchange of licenses and patents to the practical exclusion of all would-be competitors.

At the time of the formation of the Titangesellschaft, it was the intention of the National Lead-I. G. groups to extend their facilities into any country, if and when it seemed necessary. From time to time beginning in 1933 the National-Titan-I. G. group because of threatened competition in one country after another, was forced to take action to control the various competitive forces. This happened in Great Britain, Canada, and Japan.

As early as 1930 the British Chemical Trust, Imperial Chemical Industries, Ltd., evidenced a desire to engage in the titanium business and in fact carried on considerable research work in that connection. This came to the attention of the National Lead-Titan group and prompted them to take action to control the development in the British Empire. At that time, the Blumenfield British patents were owned by National Titanium Pigments Co., Ltd. It was feared by the National Lead-Titan group that National Titanium Pigments, I. C. I., and Imperial Smelting Corporation would undertake a joint enterprise and thus offer formidable competition in that territory.

The thought I had in mind there was that about the same time that the necessity developed for du Pont and National Lead to get together in this country, it can be seen here that the National Lead group was concerned that I. C. I. and these other British companies would exploit the Blumenfeld process in Britain and get ahead of them. So it appears they were taking similar steps in Britain, just about the time they were taking them in this country, to prevent the Blumenfeld development from furnishing real competition.

After considerable negotiation, a jointly owned corporation, British Titan Products, Ltd., was formed. The stock was owned 49 percent by Titan Co., Inc., and 51 percent by I. C. I., Imperial Smelting and Goodlass Wall Lead Industries, Ltd., in equal shares.

That is, you have these three British companies owning 51 percent and Titan Co., 49 percent, in this new company, which was called British Titan Products, Ltd.

In conjunction with the formation of the new corporation, the participating companies executed a series of agreements, the purpose and result of which was to divide territory and avoid competition among the various companies. The principal contract between Titan Co., Inc., and British Titan Products was to extend to 1963 and to continue in force thereafter until canceled by either party upon 12 months' notice. It is still in effect. The Blumenfeld patents had been acquired by the British Laporte Co., and negotiations between Laporte and British Titan Products were carried on in 1940 and 1941. In August 1941 an agreement in principle was arrived at. This provided that Laporte was to receive 20 percent of the British market for the duration of the war. British Titan Products tried to make it for a longer period and stated its willingness to concede a larger proportion of the market, but Laporte refused.

Jebsen now, as an officer of a National Lead subsidiary, gave his approval to this agreement and stated that he was quite satisfied that it

Digitized by Google

was only for the duration, because he felt that British Titan Products would be much better off after the war as a result of the developments which they would get from National Lead. He felt that they could use these developments to advantage in dealing with Laporte in post-war negotiations.

Now we come to Canada: The most important chemical company in Canada is Canadian Industries, Ltd. (C. I. L.), most of the stock of which is owned by du Pont and I. C. I. Under the basic agreement of 1920, Canada was within the territory assigned to National Lead and it supplied most of the Canadian market until the early thirties, when British Titan Products was allowed to ship into Canada on a preferential basis. The British Laporte Co. was also shipping into the Canadian market. Although it held the Canadian Blumenfeld patents, it did not undertake to manufacture in that country. Du Pont also was exporting to Canadian buyers, and for a number of years the various companies participated in price-stabilizing agreements.

In 1937 National Lead and C. I. L. organized Canadian Titanium Pigments, Ltd. (51 percent C. I. L., 49 percent National Lead) for the manufacture and sale of titanium in the Canadian market. At the same time, they purchased the Blumenfeld Canadian patents from Laporte. A series of contracts executed by National Lead, C. I. L., and Canadian Titanium Pigments contain the usual provisions for division of territory, licensing of patents, control of shipment of manufactured products, exchange of know-how, and so forth. The principal contract extends until 1967. National Lead continues to sell Canadian Titanium Pigments all its requirements for the Canadian market. However, it is obligated to cease all exports to Canada as soon as Canadian Titanium Pigments builds a factory which is scheduled for erection immediately after the war.

The only remaining country of any commercial consequence was Japan. By virtue of the European cartel agreements, the Japanese market had been assigned to the Titangesellschaft and to the Blumenfeld French company in the ratio of 70–30. The Titan Co., Inc., owning 50 percent of Titangesellschaft, profited by this arrangement. From the time of the execution of these agreements until 1937, the Japanese market was supplied with products manufactured in Germany. From time to time, however, there were indications of independent competition, which finally become so threatening to their control that the National Lead-I. G. Farben interests thought it necessary to undertake development of a domestic manufacturing plant in Japan.

The CHAIRMAN. The German work through Titangesellschaft was being shared, to a large extent, by National Lead and I. G. Farben?

Mr. BERGE. Yes; that is right.

After considerable negotiation and the overcoming of many difficulties, the various interested companies executed a series of seven contracts providing for the formation of a new company known as Titan Kogyo Kobushiki Kaisha. The participating companies were National Lead and I. G. Farben, operating through their jointly-owned subsidiary Titangesellschaft, Blumenfeld's French company, and a Japanese chemical company, the Kokusan Kogyo Kabushiki Kaisha. Neither National Lead nor Blumenfeld had any direct contact with the operations of the Japanase company, inasmuch as all matters were

Digitized by Google

handled through I. G. Farben by its Japanese representative, Doitsu Senryo Gomei Kaisha. By virtue of the executed contracts, Kokusan was given 50 percent of the stock of Titan Kogyo. Titan Co., Inc. (representing National Lead's interests), received 17½ percent; I. G. Farben, 17½ percent; and Blumenfeld's French company, Terres Rares, 15 percent. Because of restrictions of the German Government, I. G. Farben was unable to supply capital necessary to subscribe for its share of the stock. Consequently, Titan Co., Inc., subscribed for I. G. Farben's share and gave the latter an option to purchase these shares at any subsequent time.

The CHAIRMAN. Now, would it be correct to conclude from this testimony that the American group in the cartel financed I. G.'s participation in the Japanese company, and that I. G. Farben represented it in all negotiations and operations in Japan?

Mr. BERGE. Yes; I think that would be a correct statement, in effect, of what happened.

The CHAIRMAN. In other words, the American money went in to buy an interest for the German company, to be paid for later when currency restrictions of Hitler should be relieved.

Mr. BERGE. Yes.

Dr. SCHIMMEL. In other words, we put up the money, but the policy in actual day-to-day negotiations was determined by the Germans.

Mr. BERGE. That is right.

The CHAIRMAN. Yes.

Mr. BERGE. Because of German participation in the Japanese Titanium Co., the British Government refused to permit titanium from Travancore, India, to be exported to Japan in the fall and winter of 1940–41. Titanium was badly needed in Japan and the Japanese Government had not permitted any titanium pigments to be exported for a long time. Knowing this, and in spite of the fact that the situation in this country was very serious because of disruption of shipping and inadequacy of domestic supplies, nevertheless Titanium Pigment—National Lead—shipped 700 tons to Titan Kogyo Kaisha, Ltd., on March 9, 1941, thus aiding the Japanese to evade the embargo which the British had with good cause placed on sale to Japan. In a letter dated April 3, 1941, the manager of Titanium Pigments wrote to the Japanese company—I quote:

> Even at the time we made shipment to you of 700 tons on March 9 the situation was so serious that we should have much preferred not to have released even this quantity, but in view of the fact that we had promised it to you early last fall, we felt that we should not withdraw our offer. Incidentally at the time we made this shipment to you in March the replacement value of that ore was more than double the price at which we invoiced it to you.

The CHAIRMAN. In other words, we were double-crossing the British there and just prior to Pearl Harbor we were still shipping these paints for the painting of Japanese ships, and so forth, to Japan, and shipping it at a greatly reduced price.

Mr. BERGE. I think that is so.

The CHAIRMAN. When we were really short of both shipping and pigments, too.

Mr. BERGE. I think there has never been an adequate supply of titanium in this country during the war years to meet the demands of Government and private industry.

Digitized by Google

The CHAIRMAN. Of our own defense program?

Mr. BERGE. Yes.

The CHAIRMAN. And we were right in the middle of our defense program at that time.

Mr. BERGE. Yes; the early part of '41.

Dr. HUNTER. Senator, only a few things were put into this summary. There is a very interesting incident. A few months previous to this, the Japanese had tried to import from Travancore, India, a shipment of two or three thousand tons of ore, and ran into this difficulty of the British embargo, and the documents in our files show that the Japanese appealed to I. G. Farben to appeal to Jebsen, the Norwegian, to appeal to the National Lead to intercede with the British Government to permit that shipment of ore to be made, and that such intercession was made and a shipment was obtained through the intercession of I. C. I.'s agent in Japan. They actually got the shipment, in spite of the previous British embargo.

Dr. SCHIMMEL. Where did this 700 tons of ore come from?

Dr. HUNTER. That was Norwegian ore, in a stock pile in this country, and shipped from here to Japan.

Dr. SCHIMMEL. So they didn't get Travancore ore, but they got the pigment.

Dr. HUNTER. That is right.

Mr. BERGE. The extent to which one member of a cartel will go in protecting the interests of a foreign partner and, incidentally, in attempting to safeguard its own monopoly position, is indicated by the following letter and resolution. The letter, dated December 11, 1939, is from the manager of National Lead's patent department to the general manager of the titanium division:

Confirming our recent conversations, regarding exchange of title to patents, I beg to review the situation for you.

On September 7 I wrote Dr. Jebsen, pointing out that in view of the war certain questions arose affecting the United States patents which stand in the name of Titangesellschaft and the I. G. Farbenindustrie under which we enjoy an exclusive license. We suggested to Dr. Jebsen that it might be desirable to assign to National Lead Co., in trust, the patents of the I. G. Farbenindustrie and Titangesellschaft against the possibility of the United States entering the war and taking over these patents. *The suggestion was primarily designed to protect the patent property of the I. G. Farbenindustrie and Titangesellschaft and at the same time would have protected our exclusive license by insuring that no one else could have petitioned the government to secure licenses under them.* On December 7 I received the following cable from Dr. Jebsen:

"Your letter September 7. Subject leadcos and titanines approval *have agreed assignment* T. G. patents and applications countries outside TG territory to titanine and assignment leadcos and titanines patents and applications countries within TG terirtory to TG. Assignment patents British Empire, France must be postponed due war situation. Patents and applications of I. G. cannot be included presently but question will be studied. Please cable approval. German patents 571387 and 588230 and 604311 are in leadcos Czechoslovakian patent 39354 in Titanium Pigment Co., Incorporated's name. All other patents TG territory in Titanines name. Cable Titanine board's authorization. I assign Titanines patents and applications to T. G. as above outlined. Suggest formal resolution be made general regarding assignment and mailed. Please acknowledge cable upon receipt—Jebsen."

Of course, this cablegram, which wasn't any too clear because of the code words, was really giving directions for the assignment to the German company of the American patents, and then they wanted the formal authorization wired them and so forth.

Digitized by Google

The suggestion here is that Titangesellschaft will assign their United States patents and applications to National Lead Co. and National Lead Co. and Titan Co., Inc., will assign their applications and patents in Germany, and other countries within Titangesellschaft's territory to Titangesellschaft.

For purposes of considering this suggestion, National Lead Co.'s title may be disregarded. Several years ago National Lead Co. formally renounced maintenance of any European patents owned by it, putting upon Titan Co., Inc., the obligation to pay all maintenance charges and hence, under the agreement of 1920, Titan Co., Inc., could have requested formal assignment of these patents. They have not done so, in order to save the expense of preparing the assignments, and recording them in the various countries. The question is therefore, whether Titan Co., Inc., should assign its patents and applications to Titangesellschaft.

In discussing this matter with you on December 8, *it appeared to us that to assign these patents in Germany to Titangesellschaft might involve some risks for the future. For instance, if the Germans owned all the patents now held in Germany by Titan Co., Inc., and if, as a result of the war, they were forced by their government*, or through other circumstances, *to abrogate the main agreement, they would be free to export their products and, in general, take themselves outside of the titanium family cooperation.* I cabled this thought to Dr. Jebson, soliciting his views. A reply has just been received, which reads as follows:

I guess what that really comes to is they were afraid if they assigned these patents, they might not get them back; the arrangement might be broken after the war.

"Proposal my cable December 7 is not T. G.'s but mine. Consider this best present circumstances to secure legal position all around. Exactly legal post-war position patents otherwise very uncertain. *Prevention import partly secured in future by patents in respective countries but will be chiefly secured by all companies selfish interest in cooperation because of advantages already realized by experience.*"

In other words, "You can trust us because it's in the best interest of all of us to continue this arrangement after the war."

You will see that Dr. Jebsen believes that in view of the war the best possible legal position for each member of the family is to hold title to all patents in its territory. He believes that prevention of import and export competition will chiefly be secured in the future through the individual company's recognition of the advantages to be derived from maintaining the cooperation, having through experience appreciated the value of this cooperation.

It should be noted in this connection that even if Titan Co., Inc., retained title to the patents in Germany, and should the government force abrogation of the main agreements, particularly with a view of fostering German exports, they will find means to negate Titan Co., Inc.'s patent rights also. *Should the situation develop where Titangesellschaft is forced, perhaps against its will, to engage in export competition with other members of the titanium family, then, as pointed out by Dr. Jebsen, that competition can be controlled by patents owned by the other members of the family in their particular territories.* Therefore, I believe we should approve Dr. Jebsen's proposal. [Italics supplied.]

That this plan was put into effect is shown by a resolution adopted by the board of directors of Titan Co., Inc., December 19, 1939:

On motion duly made and seconded, the following resolution was unanimously adopted:

Resolved, In furtherance of that certain license agreement between Titan Co. A/S (predecessor in interest of this corporation) and Titangesellschaft m. b. H., of Leverkusen, Germany, dated October 3/20, 1937, and pursuant to the recommendation of Dr. G. Jebsen, vice president of this corporation, the officers of this corporation be and they hereby are authorized and empowered to execute and deliver in its name and behalf appropriate assignments to said Titangesellschaft of all patents and patent applications of this corporation, within the licensed field as defined in said agreement, in countries now embraced within the territory of said Titangesellschaft as defined in said agreement and subsequent amendments thereto, in consideration of the execution and delivery by said Titan-

Digitized by Google

gesellschaft to this corporation of appropriate assignments of all patents and patent applications of said Titangesellschaft, within said licensed field, in countries embraced within the territory of this corporation as defined in said agreement and subsequent amendments thereto, and upon the express understanding and condition that such reciprocal assignments shall in no way alter or limit the general intent and operating effect of said agreement of the several other rights and obligations of the respective parties thereto.

There being no further business the meeting then adjourned.

Among the patents so assigned to avoid seizure by the Alien Property Custodian is one covering the new rutile pigment previously mentioned. I trust that the full implications of these quotations are sufficiently clear that no further explanation is necessary. This committee has been told of the Dusseldorf conference in 1939, at which German and British business leaders planned the type of cartel economy which would protect them against the rigors of competition.

In the cable which has just been read, and the action taken pursuit to it, you have an example of post-war planning which has been all too prevalent in these cartel groups. This is not the only instance in which a German company's United States patents have been taken over by an American cartel partner to avoid seizure by the Alien Property Custodian.

The CHAIRMAN. In other words, this amounts, really, to a proposal, in full anticipation of war, that American companies protect German interests against the effects of that war.

Mr. BERGE. That is right. And specifically to forestall seizure of the patents by the Alien Property Custodian in the event of war.

Dr. HUNTER. Here is something that was not summarized here. I would like to read it. This is a letter from this same writer to Dr. Jebsen, dated January 15, 1942, which was about 5 weeks after Pearl Harbor, and after we were actually at war with Germany. It referred to certain Canadian patent applications, and these sentences occur:

While technically speaking, to furnish C. T. P. copy of the specification in case T. 236 might be a violation of the understanding not to transmit technical information from one belligerent to another, it might be justified in view of the following considerations: We could not give the Canadian application as careful consideration as could our Canadian associates.

In this sense, they are actually protecting the property rights of the I. G. in this application. Furthermore, they are entitled to an exclusive license under the application, and are prepared to assume all the expense of the prosecution, paying the same directly to Fetherstonaugh & Co. of Ottawa.

The sentence I had in mind particularly is this:

In this sense, they are actually protecting the property rights of I. G. in this application.

That was after the United States and Canada were both at war with Germany.

Dr. SCHIMMEL. So they thought the cartel with Germany was in real force, and they had to make believe it was in the interest of I. G. to go through with this arrangement.

The CHAIRMAN. The whole idea of it being to negate our force as far as the Government was concerned in dealing with the enemy.

Who was the author of the letter?

Dr. HUNTER. Kaegebehn.

Dr. SCHIMMEL. You people are going to put into this hearing a more complete set of documents?

Digitized by Google

Mr. BERGE. We can do that if the committee likes. This originally was written up in about an 85-page memorandum, and it was pretty long and involved, and I asked that it be reduced to a manageable length for my statement today. We can furnish the committee the more detailed memorandum and leave to your judgment whether it should be printed. My statement is repetitious of the longer memorandum, but it is more condensed here. There are further details in the memo, and I see no reason why we should not turn it over to the committee.

The CHAIRMAN. Let us have the long memo to study at leisure.

Mr. BERGE. The plan he recommended and discussed in this letter and about which they exchanged cables was put into effect.

The CHAIRMAN. Has anything been done to make these patents available to the public?

Mr. BERGE. Of course, we have indicted the American participants in this whole illegal scheme, and we would hope and expect that the outcome of this litigation will be to make them available.

The CHAIRMAN. All right.

Mr. BERGE. The program is to continue in the post-war economy these arrangements which temporarily, because of the rigors of war, they had to abstain from, and they make this temporary truce agreement to handle the thing during the war.

The CHAIRMAN. Wasn't the Hague memorandum entered into between Standard Oil of New Jersey and I. G. Farben a similar transaction of Standard Oil protecting I. G. Farben's interest in hydrogenation and rubber and various other things?

Mr. BERGE. That is right.

The CHAIRMAN. Which made it so hard for us to produce rubber at the outbreak of the war.

Mr. BERGE. I think there were some 2,000 patents handed over in that transaction to keep them from being seized by the Alien Property Custodian.

Dr. HUNTER. The Alien Property Custodian has vested himself with interest in all I. G. Farben's patents.

Mr. BERGE. In regard to all commodities.

Dr. HUNTER. A very broad, blanket vesting, and it is being threshed out now as to just what I. G. Farben's interest is in these things.

Dr. SCHIMMEL. Are you talking about titanium now?

Dr. HUNTER. No; just Standard Oil.

The CHAIRMAN. That consent decree does not disturb any rights the Alien Property Custodian has in those patents. So those rights still prevail.

Dr. HUNTER. That's right.

Dr. SCHIMMEL. What about the titanium patents? Have they ever been seized?

Dr. HUNTER. I couldn't speak for either the Alien Property Custodian or his counsel, but I don't know of their having been seized.

Mr. BERGE. The understanding that such assignments are involved in the transaction I have just outlined shall only operate during the war, and that after the war the game shall take up where it was left off——

The CHAIRMAN (interposing). As a matter of actual fact, that has been taken up several times by foreign industrialists even during the war, has it not?

Digitized by Google

Mr. BERGE. I think undoubtedly they are thinking about it, talking about it, planning for it, probably both in this country and other countries.

The CHAIRMAN. Do you have any evidence on what type of post-war arrangement they envisage being worked out? Isn't that one of the bases of attacks on the Sherman Act?

Mr. BERGE. I think that's so. Referring again to this story in Life by Benton, I think that makes it quite clear the amount of concern and interest that the British industrialists are expressing in the post-war problem. Lord McGowan's reference to the Sherman Act, Eric Johnston's forthright discussion of the problem in one of the speeches that he made over there, that was printed as an article in the Reader's Digest recently, and the various discussions going on right in this country in trade and industrial groups, where obviously they want to preserve in general this system but are bothered, I guess, as to whether we are going to let them do it——

The CHAIRMAN (interposing). And really hasn't the operation of this, shall we call it, self-exploitation system, by which we exploit our own people, been largely responsible for the high dollar cost of living?

Mr. BERGE. I think so.

The CHAIRMAN. Thereby bringing about the very thing the industrialists complain of, which, they say, is excessively high wages, which, of course, must be based on living cost—high dollar cost of wages.

Dr. SCHIMMEL. Don't you think, for the purpose of completing the record, it would be helpful if we could get the exact status of these patents which were transferred from Germany?

The CHAIRMAN. I think the proper thing to do is to address a letter to the Alien Property Custodian. Could you furnish to the committee, Mr. Berge, enough information that we could address to the Alien Property Custodian an inquiry as to whether or not the patents have actually been taken into custody?

Mr. BERGE. We can do that.

In a system of free enterprise the product which will best do the work and which can be produced and sold at the lowest price will take the place of competing products which are inferior in quality or higher in price though equal in quality. Our whole competitive economy is predicated upon this rule. To the extent which monopoly and artificial restraints are allowed to enter the picture to that extent is the rule set aside. Inferior or more expensive products are allowed to hold a share of the market which they would lose on a competitive basis.

This is well illustrated in the case of titanium pigment and an inferior product called lithopone. The latter is a pigment in the manufacture and marketing of which du Pont has taken a leading part for many years. Since 1933 National Lead and du Pont have maintained identical prices for titanium compounds. There have been changes in market prices on the average of twice a year on all grades of pigments and in every instance the effective date of price change of each party has been the same. With respect to lithopone, which is competitive with the calcium sulfate composite pigment, there has been maintained a constant differential. Unless the lithopone were priced below the titanium compound, it could not sell. Therefore, irrespective of costs of production, the titanium compound has been

Digitized by Google

priced 2 cents a pound above the price of lithopone. An honest technologist who knows that a better product can be made at a profit to undersell an inferior competing product cannot be expected to be happy in a situation which holds back the better and aids the poorer.

In other words, this price differential was maintained, as we see it, in order to keep a market for lithopone, whereas in a truly competitive situation it might well have replaced lithopone because of its superior qualities.

The CHAIRMAN. In other words, there was no manufacturing-cost cause for their differential. It was an artificial differential imposed to control the market.

Mr. BERGE. That is our position.

Dr. HUNTER. The very first paragraph bears that out, if you remember.

Mr. BERGE. Yes. They admit that in the first paragraph of my statement today, where I quoted from their definition of a cartel. They expressly say that one of the reasons is to protect the profits in lithopone.

One of the worst features of cartel control lies in the overlapping of fields which is found in the case of large companies such as du Pont and I. G. Farben. These companies are largely concerned not only with the production of pigments but also of many other chemical products.

One recalls the efforts which were expended in research work in the du Pont laboratories to treat copper phthalocyanine developed for paint and lacquer so that it would be unusable in the textile dyestuff field. One can only be sure of one thing: If titanium has any possibilities of use in other fields, the technologists who will be most likely to find such uses are those who are free from hampering restrictions.

Technology is prostituted when its research is directed toward preserving monopoly control rather than production of better and cheaper products. The extent to which great companies will go in requiring their technologists to make products useless rather than useful has been demonstrated to this committee in a previous hearing.

It is clear from documents taken from the files of these companies that there has been flagrant abuse of the patents in this case. It was for such abuse that the grand jury indicted the companies and certain of their officials.

The CHAIRMAN. Do you have a copy of the indictment which the committee could have?

Mr. BERGE. Yes.

The CHAIRMAN. Thank you.

(The document referred to was received, marked "Exhibit No. 156," and is on file with the committee.)

Mr. BERGE. Under the pretext of licensing each other under certain patents, the corporations National Lead and du Pont have monopolized the manufacture and sale of titanium compounds in this country. They account for 90 percent of the entire output, and the two small companies which are allowed to provide the remaining 10 percent do so under licenses from National Lead and du Pont which definitely restrict their freedom of action.

Digitized by Google

It is difficult to believe that the public interest has been adequately served by having this most valuable of white pigments subjected to complete control in this country and throughout the world by a cartel. What steps a free technology unfettered by cartel restrictions might have taken one cannot say with certainty. One may be quite sure that when the cartel shackles are broken, titanium will take its rightful place as not only the most important and useful of all pigments, but also for many other industrial uses.

The CHAIRMAN. Has the War Department requested the Department of Justice to postpone the case against these companies?

Mr. BERGE. Not yet. The indictment was returned in June, but I understand that National Lead has asked the War Department to request the postponement, and it's under advisement in the War Department.

The CHAIRMAN. Under the guise that this will hamper the war effort, I presume.

Mr. BERGE. Yes. Of course, I don't know what representations were made to the War Department, but it would have to be substantially that, because our understanding is that the only basis for postponement of a suit is if the War or Navy Department, or both, request it on findings by them that the prosecution of the suit in wartime will interfere with the prosecution of the war. So the War Department would have to be satisfied of that and take the responsibility of requesting us to postpone it.

The CHAIRMAN. Of course, there is no over-all technical agency to give advice to the War Department as to the effect of this, and therefore the War Department has to act to a certain extent blindly and accept the representations of National Lead. Isn't that about the fact?

Mr. BERGE. I think so.

The CHAIRMAN. Would such an over-all Federal technical agency, in your opinion, have been of assistance in this set-up at the present time?

Mr. BERGE. I should think so. I should think that if there had been such an agency in effect, say, about 1920, when this basic agreement was made, or even earlier, to have observed the development of this new pigment, such an agency would have been aware of the tremendous implications of the scientific development that was occurring and would have been in a position to advise the Department of Justice then as to the importance, from the scientific standpoint and the economic standpoint, of the monopolization that was occurring, and suggest legal action. Perhaps the facts would have come to our possession much sooner. That is, we depend now to a large extent on private complaint and what we can find out through our own initiative, but we don't have the guidance of any such organization, either, and I should think, if it existed, it would catch a thing like this. It would see it much earlier than we can, operating by our own devices.

The CHAIRMAN. Mr. Berge, prior to World War No. 1, we had practically left chemical research in Germany's hands.

Mr. BERGE. I think so.

The CHAIRMAN. During World War No. 1 and immediately following it, we would have sprung to a commanding position in the

Digitized by Google

chemical industry. But they put handcuffs back on us with cartels. Isn't that so?

Mr. BERGE. I should say so. The 162 cartels of I. G. Farben show that.

The CHAIRMAN. So that I. G. Farben became an economic foreign-relations bureau for the German Government, to trade all competitors out of fields and to get control of the scientific research again by such agreements.

Mr. BERGE. That's right.

Dr. HUNTER. I assume you might be interested in the gasoline technology.

The CHAIRMAN. Very much.

Dr. HUNTER. A gentleman who seems to have gone into it to a considerable extent left with us a rather lengthy memorandum on the subject, and it was our idea that it might be presented to the committee, if they can make use of it. He stated that it could be presented to the Kilgore committee. Originally he thought he would present it to the Patents Committee, but they are not in session, I think.

The CHAIRMAN. I would very much appreciate getting that.

Dr. HUNTER. It's a fascinating document, and it traces the development of the Universal Oil Products Co. and the domination of the gasoline cracking industry.

The CHAIRMAN. Who is head of the Universal?

Dr. HUNTER. Hiram J. Halle, and Dr. Egloff is the director of research.

The CHAIRMAN. Who, instead of stating that in the newspapers, always lists himself in as the president or secretary of some chemical society?

Dr. HUNTER. That's right; of the American Institute of Chemists.

The CHAIRMAN. What are the ramifications of that organization known as Universal Oil Products Co.?

Dr. HUNTER. It isn't an oil company or an oil production company in the sense of selling either of those things. It holds processes and gets patents on processes and then licenses them for the refining and treatment of petroleum products.

The CHAIRMAN. Does it do a lot of research work?

Dr. HUNTER. Yes; I think they have extensive laboratories.

The CHAIRMAN. But they produce nothing except, shall we say, lawsuits over patents if somebody happens to get in their way.

Dr. HUNTER. Well, lawsuits don't come as often as you would expect. There have been a good many lawsuits, but some of these processes of these companies—the Gasoline Products Co. and the Universal Oil Products Co.—have gone unchallenged for considerable lengths of time. That's all described in this memo.

The CHAIRMAN. Who owns Universal?

Dr. HUNTER. It is owned by Shell, Standard of California, and Atlantic has a small interest.

The CHAIRMAN. That's Royal Dutch Shell.

Dr. HUNTER. That's right.

The CHAIRMAN. That is foreign-owned, is it not?

Dr. HUNTER. That's right.

The CHAIRMAN. Foreign-controlled, at least.

Dr. HUNTER. That's right.

Digitized by Google

The CHAIRMAN. Standard of California is another stockholder, and also Atlantic?

Dr. HUNTER. Atlantic has 16 percent or something of that sort—very small.

The CHAIRMAN. In other words, it's another combination between one large foreign company and two American companies.

Dr. HUNTER. That's right. The C. R. A.—Catalytic Research Associates—which was discussed in the Standard Oil hearings before the Patents Committee, includes four major oil companies, Universal Oil Products Co., and the M. W. Kellogg Co. It is because of participation in that C. R. A. arrangement that Universal is a factor in the present production of aviation gasoline.

The CHAIRMAN. Tremendously interested financially in the monopolistic control of patents.

Dr. HUNTER. Exactly so. I think your committee will find this an interesting piece of writing.

Dr. SCHIMMEL. I wonder what are some of the main charges made, Dr. Hunter.

Dr. HUNTER. The main charges are that Universal Oil Products Co. and the Gasoline Products Co. have, over a period of years, through various devices, made it difficult for persons to get along in the gasoline or petroleum refining business without doing business with those two agencies. Some of the devices which have been used are described in some detail. It isn't brought clear down to date, because the memo was prepared some time ago. Actually what has come out since this was prepared is probably as damaging as anything in the memo itself.

You may have noticed this item in the Washington papers. This is from the Post of October 20, 1943. It is only two or three short paragraphs. I'll read it:

Thomas Raeburn White, prominent Philadelphia attorney, who conducted a 2-year investigation for the Third United States Circuit Court of Appeals into the judicial conduct of former Circuit Judge J. Warren Davis, reported to the court today that he believed Davis handed down six "crooked decisions"—five in the bankruptcy case of William Fox, one time millionaire movie magnate.

The sixth decision was in favor of the Universal Oil Products Co. in a patent case involving several millions of dollars, the report said. White added that he believed Davis received "a financial share" of a $50,000 fee which he said the Universal Co. paid its attorney, Morgan S. Kaufman, of Scranton, Pa. The report recommended that the decision be set aside.

Kaufman handled Fox's bankruptcy litigation.

Fox pleaded guilty 2 years ago to a charge of conspiring with Davis and Kaufman to obstruct justice and defraud the United States and was sentenced to a year-and-a-day in prison.

Davis and Kaufman were indicted on the same charges but two juries failed to agree and the charges were dropped.

I have here a copy of the master's report, which is commented on in that.

The CHAIRMAN. Could you leave that with us, too, please?

Dr. HUNTER. I will do so; yes.

The CHAIRMAN. All those millions referred to in the newspapers are paid by the gasoline users of the United States.

Dr. HUNTER. Yes. The gasoline users have provided the entire income. I think that has actually run into hundreds of millions of dollars from phenagling with patents, as described in this memorandum.

Digitized by Google

Dr. SCHIMMEL. Did the Department of Justice, Dr. Hunter, ever investigate Universal Oil Products?

Dr. HUNTER. Mr. Berge can answer better than I. My understanding is that recently we were authorized to do so and are about to undertake that investigation.

Mr. BERGE. That's right.

The CHAIRMAN. We will be pleased to hear of any progress made in that investigation, and we would like very much if we could get the information secured for the committee.

If that is all, gentlemen, we will adjourn.

(Whereupon, at 12:27 p. m., the subcommittee recessed subject to the further call of the Chair.)

×

Digitized by Google

Digitized by Google

Dr. SCHIMMEL. Did the Department of Justice, Dr. Hunter, ever investigate Universal Oil Products?

Dr. HUNTER. Mr. Berge can answer better than I. My understanding is that recently we were authorized to do so and are about to undertake that investigation.

Mr. BERGE. That's right.

The CHAIRMAN. We will be pleased to hear of any progress made in that investigation, and we would like very much if we could get the information secured for the committee.

If that is all, gentlemen, we will adjourn.

(Whereupon, at 12:27 p. m., the subcommittee recessed subject to the further call of the Chair.)

×

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

UNIVERSITY OF MINNESOTA
3 1951 D03 671183 G

Digitized by Google

UNIVERSITY OF MINNESOTA
3 1951 D03 671183 G

Digitized by Google